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NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS PUBLICATIONS

No. 18.—MANUAL FOR CONSERVATION OF VISION CLASSES

MANUAL FOR CONSERVATION OF VISION CLASSES

A MANUAL TO ASSIST IN THE ESTABLISHING AND CONDUCT OF CLASSES FOR CONSERVATION OF VISION

NOVEMBER, 1919

NATIONAL COMMITTEE *for the* PREVENTION OF BLINDNESS, INC.
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MANUAL FOR CONSERVATION OF VISION CLASSES

A MANUAL TO ASSIST IN THE ESTABLISHING AND CONDUCT OF CLASSES FOR CONSERVATION OF VISION

BY

WINIFRED HATHAWAY, SECRETARY

NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS; SECRETARY, NEW YORK STATE COMMITTEE FOR THE PREVENTION OF BLINDNESS

NOVEMBER, 1919

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ACKNOWLEDGMENT

To Mr. Robert B. Irwin, Supervisor of Classes for the Blind of Ohio, originator of the idea of Conservation of Vision Classes in America; Miss Ida Ridgeway, Supervisor of the Children's Department of the Massachusetts Commission for the Blind; Miss Frances E. Moscrip, Inspector of Classes for the Blind of the City of New York; Miss Estella Lawes, Supervisor of the Department for the Blind, Cincinnati Public Schools; Miss Josephine B. Stuart, Assistant Superintendent of Schools of New Bedford, all of whom, together with their splendid corps of teachers, co-operated most willingly in making this manual possible; to the ophthalmologists, Dr. Morell B. Beals, of New York; Dr. Louis Stricker, of Cincinnati; Dr. Walter H. Snyder, of Toledo; Dr. Leroy D. Monson, of Cleveland, who have devoted their time, energy and science to carry on the work of conserving vision among the school children; to Mr. Edward M. Van Cleve, who gave the benefit of his long educational experience by advice and criticism; to one and all who have contributed directly or indirectly, the thanks of the author are most gratefully acknowledged.

Dedicated to all children who, suffering from defective eyesight, may, through the opportunity afforded by these special classes, be given the larger vision enabling them to grow in wisdom and understanding

FOREWORD

A little girl sitting in a doorway is listlessly pushing a carriage back and forth in a half-hearted attempt to hush a crying child. Presently a head appears from a nearby window, and the owner, throwing down some money wrapped in newspaper, asks the girl to run to the store for various provisions. She evidently welcomes this diversion, knowing that in the newspaper will be included a trifle for her services. The crying baby can await her return. She pushes the carriage aside impatiently, and as she stands up her neglected condition becomes apparent. Her stockings are down about her shabby shoes; her ragged dress has evidently not seen the tub for many days, her general disheveled air shows small acquaintance with soap and water or brush and comb.

She returns presently and resumes her former occupation, lessening the tedium by chewing the gum she has just bought.

She is evidently a familiar figure, for the passers-by call to her in the vernacular and her retorts show an intimate knowledge of the slums.

By and by an interested spectator passes several times on the other side of the street; he crosses and accosts the child. "Playing hookey?" he asks tentatively. "Naw!" replies the girl disdainfully. "Can't go to school; can't see to read the letters!" "Can't see to read the letters!" he repeats. What is he, the truant officer, to do with a case like this? Is there no way of saving this child and hundreds like her from the life that stretches out uninterestingly before her? Is there no way of giving her an education, even if she can't see well enough to read the letters?

The answer has been long in coming—it is now here: "Classes for conservation of vision in public school systems!"

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HISTORY OF SIGHT-SAVING CLASSES IN AMERICA

From the beginning of American history there have existed educational advantages for the normally sighted child. The church and the schoolhouse were the first public buildings planned for in any colony. Since 1831, when the first school for the blind was established in the United States, a system of education for those who must learn to see with their fingers has been gradually developing throughout the country, but only in very late years has any thought been given to the large group of children who cannot see to use the ordinary school equipment, yet are not candidates for a school for the blind.

In 1909 Mr. Robert B. Irwin, a man of unusual breadth of mental vision, opened a class for the blind in the public school system of Cleveland, Ohio. A year later he was asked to accept in this class two children who were unable to keep up with the regular grade work because of defective vision. At first he used the same methods and equipment for the blind and the partially sighted children, but soon found the results unsatisfactory; a child with any vision would depend upon that rather than upon his fingers, and in consequence might injure what little sight he had.

At this time there came to the attention of Mr. Irwin the work being carried on in England by Dr. N. Bishop Harman, who had established classes for myopes (near-sighted children), arranging special equipment to meet their particular needs. Mr. Irwin, therefore, separated his class into two divisions, one for the finger readers, and one for children of defective vision; for the latter he worked out a careful plan covering the necessary equipment.

He again found a reason for change. The question of lighting conditions was not important for the blind child; sunshine was essential for the general health; to give a maximum of benefit from this source rooms with southeastern exposures were chosen. The glare and constant changes of light in such rooms proved

harmful to many of the children suffering from eye defects and diseases, hence an absolute separation of the groups became necessary and was made in the fall of 1913.

In the meantime Massachusetts had become interested in the problem, and in April, 1913, had opened the first separate class for children with defective vision in the public school system of America. It was established in Roxbury, a suburb of Boston.

New York began work in sight conservation in conjunction with classes for the blind about the same time Massachusetts did. In the winter of 1914–1915 two experimental classes were organized which, with other classes of the same character, were authorized the following year by the Board of Education and termed Sight Conservation Classes.

Other cities began to follow the example; the progress has been slow for various reasons: the work was considered to be still in the experimental stages; special equipment was difficult to get; teachers hesitated to undertake a task for which there were no opportunities for preparation.

But the experimental stage is passed; special equipment is now available, and teachers may prepare by making use of the experience of those who have already made a success of the undertaking. To help in initiating new classes, and to assist in making easier the work of classes already established, is the purpose of this manual.

REASONS FOR ESTABLISHING CLASSES FOR CONSERVATION OF VISION

For all practical purposes children having less than 1/10 vision are considered blind and are eligible for admission to a school for the blind.

There is, however, a large group of children who have considerably more than 1/10 vision, yet, because of eye defect or disease, cannot read ordinary print or see figures or letters written on the blackboard.

There is another large group of children who can see the blackboard work and read the text-book, but only by such a strain on their vision and their nervous system that any result they may

This near-sighted boy was considered a defective delinquent in the regular grade. In a sight-saving class he is not only proving a good scholar, but truancy no longer has any charm for him.

accomplish is at the expense of their sight and their general health.

Children of these groups allowed to remain in the regular grade form a large percentage of the chronic repeater class. Unless their visual defects are discovered, they are often considered mentally deficient, and one of two things is likely to happen: they become the butt of the other children's ridicule, are deprived of the possibilities of work and of play, and may change from the happy, buoyant youngsters who entered school into shy, morose, sullen boys and girls; or they may try to escape the uninteresting and unprofitable by playing truant, and truancy is the open doorway to the Juvenile Court.

To provide proper educational advantages for these two groups is the object of the conservation of vision class in public school systems.

EQUIPMENT

If the class for conservation of vision is to be a success, careful attention must be given to the selection of adequate equipment. This may be divided into three classes:

1. Essential Equipment.
2. Recommended Equipment.
3. Desirable Equipment.

1. Essential Equipment—Selection of Room.—The first consideration must be given to the selection of a room; the fact that only ten or twelve children are to occupy it is no reason for deciding that a small area will meet the requirements. It must be borne in mind that this type of work necessitates a great deal of moving about. There must be ample space to allow for the changing of the position of chairs, desks, tables, etc., in order to obtain the best lighting conditions and to make it possible for the pupil to get as near as necessary to the blackboard or to objects being studied. Another consideration is the space for active exercise; even a short period of close work requires the expenditure of great nervous energy on the part of the child suffering from defective vision, hence his intervals of rest and recreation must be frequent; a half-hour of intensive work must, in most

A well-equipped sight-saving class-room.

cases, be followed by a few minutes' period of relaxation—rest, organized play, or manual work requiring no close attention.

An average class-room (720 to 900 sq. ft.) is none too large; the superintendent who attempts to crowd a class into a small space is making an initial mistake that will tend to defeat the object for which it is established.

Lighting Conditions.*—The next consideration is of lighting conditions. In many cases sight is much affected by the general health, hence children suffering from defective vision are often benefited by sunlight; on the other hand, the constantly changing light emanating from a southern exposure is most trying to afflicted eyes. The point to be borne in mind is that the light must be as nearly constant as possible.

To obtain a maximum of benefit a northeast exposure has been found most desirable; the morning sun floods the room, and the most constant diffusion is gained from the north light. If a northeast exposure is not possible, the order of preference is as follows: east, north and east, northwest, west, north and west, north.

Unilateral lighting, that is, by windows located on one side of the room only, is advocated, provided no part of the work plane is more distant from a window than one and one-half times the height of the top of the window from the floor. If bilateral lighting is used (windows on two sides of a room), the walls must in all cases be adjacent, to eliminate cross shadows. Seats and desks should be so arranged that the light comes from the left, or, in case of bilateral lighting, from the left and back; no child should sit facing the light.

Nearby buildings should not be close enough to obstruct the horizon; satisfactory illumination is usually obtained when the visible sky subtends a minimum vertical angle of 5 degrees at any work point in the room.

The window-glass area shall equal not less than one-fifth of the floor area. Best results are obtained from windows placed 3 feet 3 inches from the floor to window-sill and 6 inches from the ceiling, as most light is received from the top.

*For fuller detail see "Code of Lighting School Buildings," published by Illuminating Engineering Society, 29 West 39th Street, New York.

Window Shades.—The purpose of window shades is threefold—the diffusion of direct sunlight, the control of illumination to secure reasonable uniformity, the elimination of glare from the visible sky and from the blackboard wherever possible. The most satisfactory results have been obtained by equipping each window with two shades, operated by double rollers placed near the level of the meeting rail; the shades may then be lowered or raised from the middle, not only providing the maximum benefit of light, but of air, as the arrangement admits of opening the window from the top or the bottom without reference to shades. A dark green is restful to the eyes, but excludes too much light. Shades of a buff-colored, translucent material transmit a considerable amount of light and diffuse it at the same time.

Walls and Ceilings.—The walls and ceiling of a room must help in conservation of vision. Since in these special class-rooms southern exposures are to be avoided, the best tone on the walls is a light buff or French gray in dull finish. The ceiling should be white or light cream.

Care must be taken in the selection of the woodwork. A dark wood absorbs the light, and a glossy surface causes a most irritating glare. A dull-finished surface of fairly light colored wood will prove most satisfactory. Except for ceilings, white is to be avoided, as it is most trying in its intensity.

Artificial Lighting.—Artificial lighting conditions are almost as important as natural lighting conditions. When classes for conservation of vision were inaugurated, artificial lighting was given no consideration, as all sight work was prohibited when the daylight was not sufficient to give the required amount of illumination. It was soon found, however, that the children lost so much time, especially during the short winter days, that they could not keep up with the regular grade work; that, moreover, they would strain their eyes in an effort to see anything that attracted their attention; hence the consideration of adequate artificial illumination became imperative. Another factor entered into the consideration; it proved useless to try to impress upon the children the necessity of conserving vision by the correct use of light, while the artificial light fixtures in the room demonstrated the worst possible lighting conditions. As a result, a

Dark winter days do not interfere with the work of the pupils in this room, well lighted by artificial equipment. The shutters are closed to prevent the eye-strain that might result from different light sources.

uniform system of artificial lighting has been adopted by the Ohio classes, which other states would do well to follow.*

The indirect and semi-indirect systems of lighting have been found most advantageous; these reduce glare to a minimum.

For the average room (720 to 900 sq. ft.) from four to six fixtures, preferably the latter, should be installed. From two and one-half to three watts per square foot of floor area should be provided, with indirect or semi-indirect fixtures.

Cupboards.—Since practically everything used by the children of conservation of vision classes is larger than the general grade size, adequate space must be provided for holding materials. A book closet with shelves wide enough to hold large type books and large size paper is essential. A wall cupboard, divided into generous spaces according to the number of pupils to be accommodated, is likewise necessary, so that each child may have a place for his handwork; by this arrangement he can get it and return it easily without taking the attention of the teacher from the assistance she may be giving to another child.

A second cabinet, likewise divided into spaces, will be considered in connection with the discussion regarding luncheons.†

A set of zinc-lined bins with sloping, sliding covers, for holding raffia, reed, etc., will eliminate much waste of time and material.

Blackboards.—The ideal condition is to do away with all blackboards; they are unsanitary; the chalk-dust is breathed in by the children and is a source of irritation to delicate throats and sensitive lungs. The erasers are carriers of germs, and the oiled cloth, sometimes substituted for them, is unsanitary, as it keeps the hands in an unclean condition. The dark surfaces of the boards absorb much of the light that the children need, and are, moreover, gloomy and depressing.

In time to come blackboards will be relegated to the company of the discarded slate, now so adequately replaced by paper, despite urgent protests that it was a necessary part of school equipment.

Large rolls of paper of a light, neutral gray or manila color, slightly rough in texture, will be given the blackboard space in well-regulated schools of the future. These will do away with

* For full details of the Ohio system, see page 107. † See page 68.

the irritating chalk-dust; dustless crayon can be used, and the rubbing out, the present chief source of the dust, will be eliminated.

The paper will be on adjustable rolls, easily turned by the child, so that he may write in a space slightly below the level of his eyes, and not strain eyes and muscles in attempting to reach the upper board spaces on tiptoe and the lower ones on his knees. The paper will be held taut by the rolling device, and will be so arranged that re-rolling will make possible the use of both sides.

Since, however, no such device is yet available, the best use of the present system must be taken up.

Each room should be equipped with not less than 16 square feet of good slate wall blackboard for each pupil; the surface should be as dull as possible. The blackboard tray should be about 24 inches from the floor; blackboards should not be placed between windows. Their position should be carefully determined so as to eliminate glare. Shades or curtains of the same color as the walls, if pulled down over the boards when these are not in use, will prevent absorption of light. A number of rollers holding blackboard cloth should be provided for work that is to be kept, such as outline maps, etc., and for preparatory work done by the teacher, such as a copy for typewriting.

Seating Equipment.—Movable adjustable seats and desks should be supplied. The necessity for such will be readily appreciated: not only must these children be able to move their seats and desks close to blackboard or chart, but they must be able to turn them in any direction that will give the most satisfactory lighting conditions. The desks must be so adjusted that they can be raised to a sufficient angle of elevation, so that in practically all desk work the child, especially the myope, will have his work at a correct angle and will not strain eyes and back by bending over a level desk.

There are on the market a number of seats and desks answering this description; many are satisfactory in some particulars, but lacking in others. The Moulthrop type of desk meets the general conditions; different manufacturers have made changes, and in selecting it is well to take several items into consideration. Some manufacturers make the seat too long and thus confine the body

THOMPSON MOVABLE AND ADJUSTABLE CHAIR DESK. TYPE R, MODEL B
Quaint Art Furniture Co., Syracuse, N. Y. Note book drawer and rack: desk rack to hold papers in place; dull surface.

Moulthrop Desk Chair. Barnet Phillips Co., 101 Park Ave., N. Y. Equipped with desk rack for holding books and papers in place. Approved by American Posture League.

Moulthrop movable chair desk. Langslow, Fowler Co., Rochester, N. Y.

THE HEALTH DESK

Van Evrie Kilpatrick, 124 West 30th Street, N. Y. The desk has an insert of soft wood for attaching paper. The chair may be fastened to hooks on the under side of the desk to enable the combination to be readily moved.

unnecessarily; others use a metal rod in the construction of the drawers, causing a great deal of unnecessary, nerve-racking noise; this can be eliminated by felt strips; others do not give a sufficient angle of elevation to the desks, and still others omit the rail at the lower edge of the desk by which papers, books, etc., are kept in place; a book rack at the side of the desk is of great advantage, and a dull or matte finish is essential. Several illustrations of desks are here given; in each case the desk and chair shown have been seen in actual use in the class room. Desks and chairs must, of course, be ordered in correct sizes.

Large Type Books and Charts.—One of the great difficulties in establishing a class for conservation of vision has been the lack of school books printed in large clear type. A number of experiments have been made and it has been found that large type in itself is not sufficient. In many forms of type the lines are too narrow, in others the up-stroke is lighter than the down-stroke, and in all cases spacing must be given consideration. Opinions differ greatly about the type best suited to the purposes of conservation of vision classes. Dr. N. Bishop Harman, originator of the classes for myopes in England, started his work with two-inch letters.

In America the first large type books for this purpose were printed in very black bold face 36-point type, one side of the page only being used. Some critics are of the opinion that this is the best form; others believe that a 24-point type is better, provided that the spacing is correct and the strokes of the letters are of equal value.

Careful experimentation is being carried on, and future books for conservation of vision will doubtless be printed in the type proved best by this study.

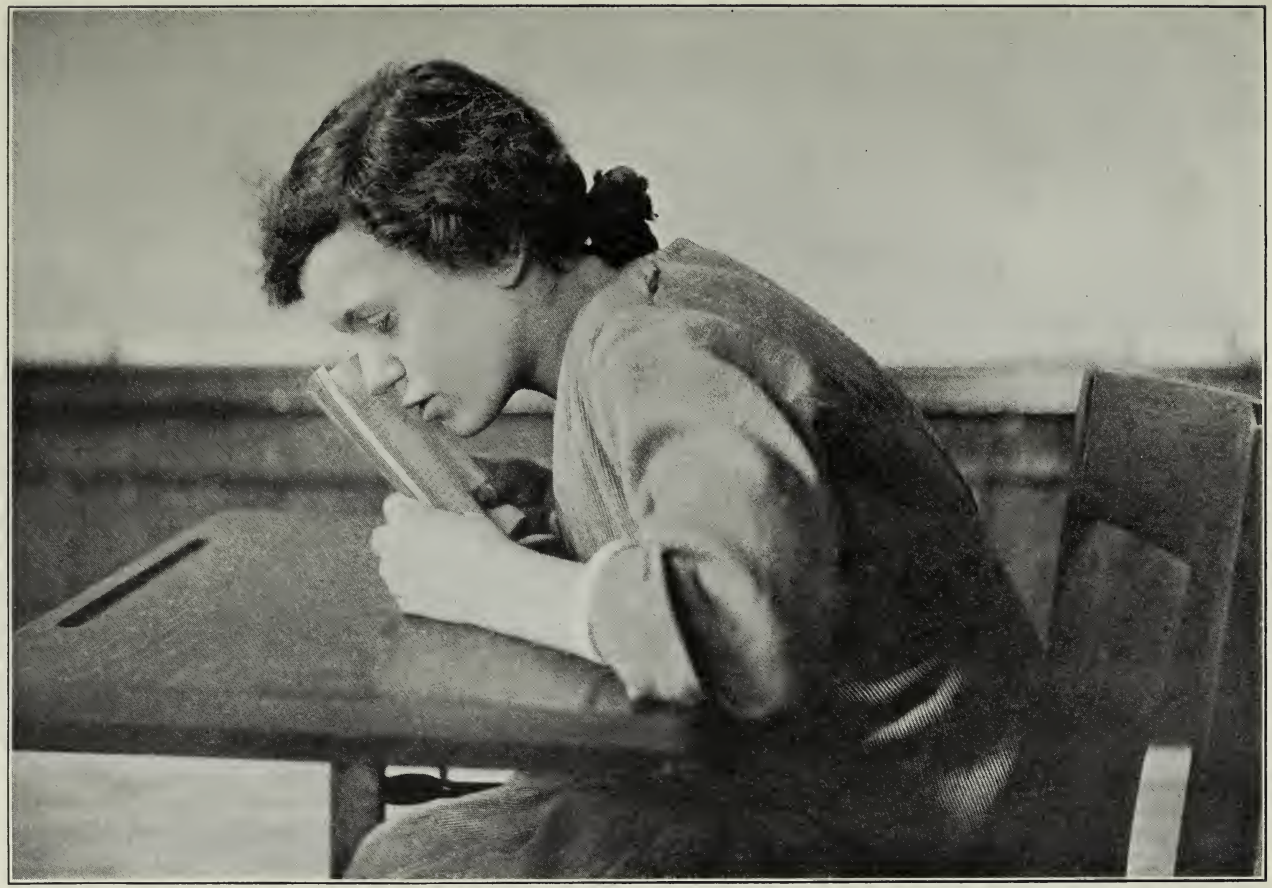
A list of all large type books now available is appended.*

A difficulty that presents itself is that every state, city, and in some cases every school in a city selects its own books; hence readers, histories, geographies, grammars, etc., printed especially for these classes cannot cover the range of books used in the grade work.

A child may, however, be taught to read from any good reader, and this specially printed large type reader may be used merely

* See page 106.

The large type book has made reading possible for many children who could not see ordinary type.



Myopic (near-sighted) girl trying to read from ordinary text-book.

With corrective glasses she has less difficulty.

She is now in a sight-saving class where large type books, adjustable chair-desks, and proper lighting conditions reduce eye-strain to a minimum.

for the purpose of teaching reading. The language lessons, etc., developed from the reading lessons in the regular grade can be obtained orally or by help from the special teacher. Teachers sometimes try to print a copy of the books used in the regular room so that the child will have the benefit of the same subject matter, but such books usually defeat their purpose; the letters and spacing are uneven, giving an incorrect amount of light and shade; these makeshift books may in the end prove more harmful than the ordinary text-book.

Large reading, spelling, phonetic, and number charts are part of the essential equipment; the reading and spelling charts should be of the same series as the large type books.

Paper.—Large writing is as essential as large type. A slightly rough, unglazed, manila paper in large size sheets (12 inches by 9 inches minimum) should be included in the list of supplies. Part of the order may be for heavily ruled paper, with lines one inch apart, running crosswise or lengthwise of the paper, and part for plain paper. Manila drawing paper, 24 inches by 36 inches, 50 pounds to the ream, may be obtained and cut into convenient sizes.

Pencils and Pens.—Pencils with soft, thick, heavy lead, making a broad, easily seen line, are necessary. It is desirable to omit all pen work; the teacher should be furnished with spoon bill and rubber pens for general preparatory work.

Table and Chairs.—So much hand work is done by children in the conservation of vision classes that a table and a sufficient number of chairs to meet the needs of the class will be found necessary. A table 10 feet by 3 feet, with three drawers on each side, is convenient. Matte surface should, of course, be ordered. The usual furnishings—teacher's desk and chair (dull finish), dustless chalk, erasers, etc.—form part of the essential equipment.

Typewriter and Stand.—A typewriter is one of the most efficacious aids in conserving sight; the modern touch system of writing enables the child with defective vision to accomplish much that would otherwise be too great a strain on his eyes.

Typewriters should be equipped with a silence pad and a shield for covering the letters. Blank rubber or celluloid caps for covering the keys do not serve the same purpose as a shield,

as there is a great temptation to memorize the position of the letters through the eyes rather than by the fingers.

The shield covering the letters takes away the temptation to memorize their position through the sense of sight.

A stand of correct height—about 26 inches—is important; if a desk or table too high or too low is used, the correct position, not only essential to the most efficient work, but to the conservation of sight, cannot be sustained. A wall chart for beginners and a standard book on typewriting are also essential.

Material for Hand Work

½ dozen wooden looms with steel rods
Comb and needle, 9⅞ inches by 13 inches
1 wooden loom, rod, comb and needle, 21½ inches by 20 inches
1 dozen scissors (round tips)
Raffia of various colors
5 packages raffia needles
Raffia picture frames of various sizes
Reed, sizes 1, 2 and 3
Wooden basket bottoms of various sizes
1 book on basketry

The use of the materials will be taken up under suggestions for busy work.*

2. Recommended Equipment.

Plasticine, plasterine, or clay for modeling and map work
Zinc or large wooden letters for young children. (These help to develop the sense of touch)
Large knitting needles and yarn
3 boxes peg boards
2 boxes colored square pegs
1 set school building blocks
1 dozen bead laces, black
Wooden beads
Cut-out maps

3. Desirable Equipment.

Sand table for hand work, geography, and nature lessons
Cabinet of weights and measures
Piano, graphophone
1 good basket-ball
1 large size loom

MEDICAL SCHOOL INSPECTION IN ITS RELATION TO CONSERVATION OF VISION CLASSES

Where medical inspection of school children is adequately provided for, examination is made of the eyes of each pupil at the time he enters school and at least once a year thereafter during his school life. Under such conditions eye defects and diseases are found early enough to prevent serious outcome in

* See page 96.

many cases. A careful study made in two cities in Ohio shows interesting results. In the larger community, where medical school inspection is very thorough, there was found to be a proportion of one child to every 1200 of the school population requiring the special advantages of a sight-saving class; in the smaller place, where there is practically no medical school inspection, the proportion was found to be one child to every 250 of the school population.

In the latter the records show that 33⅓ per cent of the children were returned to the regular grade at the end of the first year, whereas in the former 16 per cent were so returned; it would, therefore, seem that thorough medical school inspection, by giving proper examinations and by arranging, where necessary, for refraction and treatment, keeps out of the conservation of vision classes a large percentage of children who would otherwise need a year's special care in a sight-saving class.

In the great majority of cities medical school inspectors and school nurses have far too large a number of children under their jurisdiction to insure entrance and yearly examinations.

It must likewise be remembered that no matter how efficient a school physician may be, the very nature of his work requires that he be a general practitioner, not an eye specialist, so that with even the best medical school inspection cases slip through and eye conditions are not discovered until the child becomes a candidate for a conservation of vision class. The ideal, of course, is to have every child's eyes examined by an ophthalmologist.

Under existing conditions the grade teacher must be depended upon for much assistance. She is not expected to diagnose; she is forbidden to treat, but it is her function to make individual observations. If a child squints, puckers his forehead, complains of headache, is easily tired, is cross-eyed, has difficulty in seeing the blackboard, holds his book too close to his face or too far from it, or fails to make the average progress, the teacher should report the case for special examination. If, as a result of this, eye trouble is discovered, the matter should be taken up with the parents by the school nurse. If parents are able to have proper treatment, yet refuse to do so, action should be taken in the interest of the child. If parents cannot afford proper care,

arrangements should be made to have the child taken to an ophthalmologist, or to the best eye clinic available; if possible, the school nurse should accompany him, so that directions may be understood and followed. If, when every help has been given, the child's vision cannot be brought up to an accepted standard, he becomes a candidate for a conservation of vision class.

CANDIDACY OF CHILDREN FOR CONSERVATION OF VISION CLASSES

Sight-saving classes cannot accommodate all children suffering from eye defect or disease, nor is it advisable that they should do so. Many children can be fitted with glasses that will bring their sight practically up to normal, and there is no reason why such should not do their work in the regular grade, provided that the difficulty from which they are suffering is not progressive.

Conservation of vision classes are established to meet the needs of two groups of children:

1. Those who, because of defective vision, cannot use the ordinary school equipment: children suffering from cataract, corneal scars, optic atrophy, etc., come under this heading.

2. Those whose sight would be injured by using the ordinary school equipment, as in children suffering from high myopia, retinitis, choroiditis, etc.

It has been necessary to accept some standard of admission to these classes; various localities have worked out their own schedules. In all cases it is understood that the conditions exist after proper refraction has been made.

Ohio Standard*

1. Children who cannot read more than 6/24 at distance and who cannot read 2.00 at 20 centimeters.
2. Myopes whose condition is likely to be progressive.
3. Hyperopes who have symptoms of asthenopia, and who have more than 5 diopters of hyperopia.
4. Children who have an astigmatism of more than 3.5 diopters, whose vision cannot be brought up to more than 6/24.
5. Children with maculæ, nebulæ, leukomæ (scars) who have less than 6/21 vision.

* The Cincinnati department has a slightly different standard.

Testing the eyes of a candidate for a sight-saving class.

New York Standard

General standard of 20/50 or less in the better eye, except for myopes whose cases must be considered individually.

Massachusetts Standard

1. Children suffering from congenital defects, old scars of the cornea, optic nerve atrophy, etc., whose vision cannot be brought up to beyond ⅓ normal.
2. Young children suffering from myopia whose vision cannot be brought up to beyond ½ normal (after the child has become accustomed to glasses), where the correction is three diopters or more. All children suffering from myopia which is progressive, even though glasses may bring the vision up to nearly normal.
3. Children with hyperopia or astigmatism whose vision is 20/100 or less, unless there is decided asthenopia.
4. Children suffering from cataract where the vision is ½ normal, and there is difficulty in accommodation.

Children with defective vision are reported to the school authorities by the teacher, the nurse, the school physician, the private physician, the clinic, the social worker, etc., but all cases must be finally passed upon by the ophthalmologist appointed for this particular work.

In Ohio an ophthalmologist is appointed in each city by the Board of Education; in New York City (the only city in the state in which classes have been established for any length of time) the ophthalmologist is appointed by the Board of Health.

In Massachusetts the Massachusetts Commission for the Blind takes entire charge of the work throughout the state.

In all cases a careful examination is made; a card is filled out stating the difficulty from which the child is suffering, the exact amount of eye work to be done, the time for returning to the clinic, etc. The original is kept at the office where the examination is made, and copies are sent to the supervisor of the educational department under which the class is established, and to the class teacher. Careful records are made at the time of treatment and reëxaminations; these assist greatly in determining whether a child's vision has improved sufficiently for him to return to the regular grade, or what changes shall be made if the prognosis is unfavorable.

REPORT ON SPECIAL EYE CASES

Borough of **Manhattan**

Name **S------A------** Age **11** Date **Oct. 4,** 1919.

Address **168 Hester St.** P.S. **21** Grade **2b** Nationality **Italian**

Present Condition **Vision with glasses O.U 20/200**
Progressive Myopia. Trachoma & Pannus. O. U.
Under treatment at P.S. 65 Clinic

Recommendations: **To wear glasses at all times. Work to be held at a distance of 16 inches from eyes. Eyes to be retested every six months. To use eyes for periods of ½ hour.**

Department of Health - City of New York
Bureau of Child Hygiene

M.D.

Card used by the New York City Department for children in conservation of vision classes.

Record systems can be worked out according to individual requirements; an illustration is given of cards found very satisfactory by the New York City Department.

After-care

The decision for candidacy to conservation of vision classes is but the beginning of the work to be done by the ophthalmologist; it will readily be seen that the examination must be followed by the necessary care and treatment. Where parents arrange with a private physician, no interference is attempted, but in the great majority of cases the board of education or the board of health must bear the responsibility.

The City of New York has found one of the best solutions of the problem by establishing special eye clinics in the public schools distributed in such manner as to make the least amount of travel necessary; the number is far too small to meet the demands, but a beginning has been made and the clinics have already demonstrated their right to exist. The Board of Education supplies the room and the Board of Health appoints the ophthalmologists, nurses, and assistants.

At these clinics all school children suffering from eye trouble are examined and, where parental authority is given, treatment carried out; by this method time and energy are saved; the school nurse sees that children attend the clinic when necessary, and does follow-up work to explain treatment, etc.

The ophthalmologist at the head of the school clinics makes all decisions regarding the entrance of children into conservation of vision classes; once in these classes, the children not under private care become his special patients; he is thus able to watch the progress made and to note any unfavorable symptoms. This would be practically impossible in a general eye clinic, except under some such plan as made in Massachusetts. Most of the eye work for school children in and around Boston is done at the Massachusetts Ear and Eye Infirmary. The supervisor of the work in the Massachusetts Commission for the Blind, who has made a very exhaustive study of eye conditions, has regular hours at the clinic two days a week, at which time children of the public schools needing attention are received by her. She makes

all arrangements with the ophthalmologist for examination and treatment. Where children are attending other clinics and in cities in Massachusetts too far removed from Boston to make the journey practical, special arrangements are made with such clinics and with local ophthalmologists.

In Ohio an ophthalmologist appointed by the Board of Education in each city takes entire charge of this work. The Cincinnati records kept with the utmost care and precision are indicative of the professional and personal interest given by the ophthalmologists who undertake the supervision of this work.

It should be borne in mind, however, that whatever system is adopted for caring for the eyes of the pupils, the child is still under the general medical school inspector for all other conditions. A thorough physical examination should always be given; the child may be suffering from some disease that must be cured before the vision will improve.

It is advisable for the ophthalmologist to devote a little time now and then to the conservation of vision class children in their own room; a personal word with the teacher and a first-hand knowledge of how instructions are being carried out will often accomplish more than reams of correspondence. An opportunity of seeing the child actually at his work will give a better understanding of his reaction than can possibly be obtained at the clinic.

SYSTEMS UNDER WHICH CONSERVATION OF VISION CLASSES WORK

Two distinct systems have evolved for carrying on the work of classes for conservation of vision.

1. Children with defective vision are segregated in special classes.

2. Children with defective vision are considered regular students in the grade but go to the special room for individual instruction and assistance in any work requiring intensive use of the eyes.

The first system offers two plans:

1A. Special classes for conservation of vision in which the regular grade work is done.

1B. Special classes for conservation of vision in which a maximum of effort is placed on hand work, and only sufficient academic subjects studied to lay a foundation of education.

1A. Under competent teachers, this system has accomplished such splendid academic results that, if the work were to be judged from this aspect alone, there would be little room for adverse criticism.

Several difficulties, however, present themselves. The general trend of education is away from the district school idea which this type of class so closely resembles; in the district school the teacher has sufficient difficulty in keeping children of several grades and ages occupied while she is giving the individual instruction necessary. Added to this problem the conservation of vision teacher must be constantly on the alert to follow the directions of the ophthalmologist, for upon her care depends, to large extent, the saving of the sight of her pupils. She must bear in mind that John must use his eyes for only short periods at a time; that Sue, suffering from photophobia, must have a minimum of light; that near-sighted Harry's book must be held at just the right angle. She must prepare a mass of special material and, at the same time, must keep her children up to standard requirements. This is indeed an Herculean task; the success of such a class is often bought at the expense of the teacher, and it is small wonder that nervous breakdowns follow in the wake of such arduous expenditure of energy.

The chief disadvantage of this type of class is that where there is but one child in a grade he has no opportunity of working with other children of his mental age.

The final drawback is less tangible yet quite as important. Children in a segregated class are looked upon as apart and different from other children; they are singled out and excluded from the sports in after-school hours; this tends to make them self-conscious and morose and so defeats one of the objects the class is intended to serve.

1B. In this type of class the theory is that it is unwise to encourage a love for scholastic work in view of the fact that to do so might lead the children to select a vocation that would

tend to harm rather than to conserve their sight. The program, therefore, lays emphasis on hand work.

The logic is excellent, but another problem must enter into the discussion. In a number of cases, under proper treatment and conditions, a child's sight may improve so much that it is possible for him to return to the regular grade. He then finds himself at a disadvantage—he is more proficient in manual work than are his classmates but may be wholly lacking in some academic requirement.

When the time arrives, as it surely will, when school systems cease to follow the method of the mythological bed in which the wayfarer was either stretched or dismembered to fit; when they teach by subjects rather than by grades and allow children to advance as rapidly as possible in those branches for which they have special aptitude,* this system can readily be followed, but the present problem is to meet conditions as they exist.

The disadvantages of segregation that were found in the 1A type of class apply to the 1B type.

2. This system is based on the coöperative plan; the child with defective vision is considered a member of the regular grade class. His name is on the register; his seat is assigned him; he joins in the games and interests of the class, and competes with children of his own mental age; his general class spirit is fostered. He remains in the regular class room for oral work, for gymnastic exercises, for games and dramatizations, and for such written and other work as will cause no strain upon his eyes. For all work requiring close use of his sight he goes to the special room, where assignments from regular text-books are read to him; geography lessons explained on specially prepared maps, and his reading lesson taken from large type books designed to meet his particular needs; a more detailed account is given under "Time Distribution." †

The disadvantages of this type of class are twofold: the passing back and forth may create some confusion, although this can be regulated in the same manner in which departmental work is

* This type of class has already been established in some public school systems.

† See page 50.

now carried on in many schools. A more serious disadvantage is that in crowded districts there is not always an opportunity to allow a child two seats, one in the regular room and one in the special room. It is wise to bear in mind, however, that, if left in the regular grade, where the teacher cannot possibly afford him the special attention necessary without sacrificing the interests of the other children, the child with defective vision will become a chronic repeater; he will occupy for two terms or more in each grade a seat that should be given to another child at the end of the first term. He will make little or no progress and will doubtless injure what sight he has.

In the opinion of those who have given very careful consideration to all types of classes for the conservation of vision, and have followed with keen interest the results obtained, the coöperative system is thought to offer by far the greatest advantages and to be hampered by the fewest objections.

THE TEACHER

The ultimate success of a class for conservation of vision depends upon the teacher; given all other conditions ideal, but a teacher unfitted for her work, the inevitable result will be failure. The material things are but the tools, inert and quite useless unless the teacher makes them active instruments for training and development.

The teacher of a conservation of vision class faces many problems that do not enter into regular grade teaching. She will have several grades instead of one; many of the children who come to her will be shy, diffident, and unresponsive, if not actually sullen and morose; in the regular grades no special attention could be given them; after a few futile efforts on the part of the grade teacher to make them understand what they could not grasp because they could not see, they were allowed for the most part to sit unheeded among their companions, accepting the stigma of stupidity, excluded from work and from play until they too ceased to make an effort and gave to their unsympathetic world the indifference it accorded them. When medical school inspection finds the child with defective vision at the time he enters

Children in a sight-saving class learning to work independently.

school this condition of affairs will no longer exist, but to meet the problem of the present time the special teacher must possess a personality that will win the children from their dark corners of retreat. She must be sympathetic without allowing her sympathy to interfere with accomplishment; she must be interested and interesting; she must thoroughly understand how difficult concentration may be for children to whom it is a distinct physical as well as mental effort, and must be able to present subject matter in a way to hold their attention without undue strain. She must be young enough to be plastic, but old enough to have had considerable experience in grade teaching. She must be able to inspire the children with enthusiasm and to hold them to sustained effort. Tact and a spirit of coöperation must be essential parts of her stock in trade, for her work is not confined to her special room; it is sometimes necessary for her to hew a path for her pupils through the prejudices of the school. Such a teacher will not endure to see her children slighted; recognizing their handicap, she will claim for them advantages necessary to overcome it, lessening these gradually as they grow strong to meet the conflict, and imbuing them with a spirit of independence through confidence.

From the scholastic standpoint the teacher must have a foundation of general training; but this is not sufficient for her special work. To select a good grade teacher and place her in charge of a conservation of vision class is like employing a generally trained army officer to guide an airplane. She may make a success of it but she will be using for experiment her much needed energy. Naturally such a course was necessary when the work was inaugurated, but the wise take advantage of the blazed trail.

Two courses are open:

1. To obtain a teacher who has been successful in conducting a conservation of vision class elsewhere. This is the more difficult method; the work is comparatively new, and few such teachers are available.

2. To select a grade teacher who has the necessary qualifications and send her as pupil teacher to a successful conservation of vision class, where she may have ample opportunity to observe

the methods and get some practice teaching under criticism before undertaking independent work. She will soon develop individual lines of action, but this experience will enable her to start with a first hand knowledge of the basic principles underlying the movement.

Added to the many requirements for a successful teacher, a knowledge of eye conditions is of value, but by no means essential.

Once in the work, however, the teacher will find it of advantage as opportunity is offered to make a study of the difficulties under which her pupils are laboring. An understanding of these conditions will help in devising new methods of presentation.

The card prepared by the ophthalmologists for each child will give a basis for study; the teacher will soon see that a child suffering from myopia must have his work at a correct angle and will take pains in the adjustment of his desk. She will realize that quiescent cases of certain eye diseases may suddenly become acute and call for special attention. She will want to understand why the child with cataract is allowed to use his eyes all he can while the child suffering from choroiditis must be restricted to short periods of intensive work followed by relaxation. By attending the eye clinic whenever possible with her pupils she will be able to gain some fundamental knowledge easily increased by studying the special case under consideration in some of the less technical books on the eye, such as Posey's "Hygiene of the Eye" or May's "Diseases of the Eye."

In Massachusetts the very efficient supervisor of these classes arranged a series of short non-technical talks for all conservation of vision class teachers, with the result that the interest was greatly stimulated and the pupils benefited. A local ophthalmologist is often glad to arrange for such a course.

One of the most successful teachers of a conservation of vision class when asked what she considered the greatest factor for success replied that it was to retain the attitude of the learner; to this end she each year takes up a systematic study of some new subject, so that she may ever bear in mind the difficulties of her pupils.

Because the work of these classes is specialized, frequent conferences among teachers doing similar work are very helpful;

there is danger of the teacher's getting into a rut if her activities are too isolated; she needs suggestions from others, and is often able, through conference, to obtain a solution of the problem that is most vexing.

The aim that the teacher must constantly bear in mind is that the object of the class is to save sight; so to teach the individuals under her care that they will understand the principles of conservation and will go forth to their life work fortified to take upon themselves the responsibility of saving their own sight.

And what is the stimulus that shall encourage these teachers to constantly renewed effort?—The consciousness that they are giving light for darkness; confidence for distrust; effort for shirking; interest for indifference; joy for sullenness; responsiveness for reticence, and, above all, good citizens for dependent malcontents.

SUPERVISION

In cities having a large number of classes for conservation of vision, as well as classes for the blind, a supervisor is usually appointed to take charge of these two lines of work. In some places all special classes are grouped under one supervisor of the city, county, or other geographic division. Some states are appointing a state supervisor for conservation of vision classes.

In all cases the work of the supervisor is the same. It is carried on under and in coöperation with the board of education, and consists chiefly in surveying the territory under supervision for candidates; arranging for the examination of such and the treatment of children in sight-saving classes; inaugurating new classes; choosing and equipping class-rooms; selecting teachers, and, in general, undertaking the many adjustments necessary to obtain the best results.

The work of the supervisor is pedagogical, not medical, hence the greatest possible care should be taken to select a man or woman of wide educational experience.

CINCINNATI'S COÖPERATIVE PLAN

The very progressive supervisor in charge of the Cincinnati classes for conservation of vision believes in coöperation and has established a plan that is meeting with great success.

In every school a volunteer teacher is selected who is particularly interested in eye hygiene. With her associates from other schools she attends each month a conference at which a talk on the subject is given or a round table discussion is held. She takes back to her school the various suggestions she has received and sees that they reach the other teachers. From time to time she visits the class rooms in her building, assists the grade teacher in solving problems of lighting, etc., takes particular note of seating arrangement, helps teachers to decide when children need eye examinations, etc. For example, she may go into one of the numerous kindergarten rooms where a teacher, ignorant of the possible consequences, has placed the tables in such a way that several children sit facing the light; it is in her province to suggest tactfully that the tables be moved so that the children sit with their back to the light, having it fall on what they are doing and not glaring directly into their eyes. If there are windows on two sides of the kindergarten room, the tables can be arranged as the two sides of a triangle rather than in the usual form of a hollow square.

She may likewise suggest that in a class room bilaterally lighted, the teacher's desk be placed across a corner, instead of directly in front, so that the teacher may be spared direct light, yet be able to obtain a full view of the room.

In fact, she holds herself responsible in general for the high standard of vision in her school.

Wherever such a plan is instituted it is of great advantage to get the younger teachers of the school to volunteer. There will thus be formed a group of young enthusiastic teachers with a knowledge of the problem, an increasing interest in eye hygiene, and a growing understanding of eye difficulties; from such a group it will be possible to select teachers for new conservation of vision classes. They will have been tried out in regular grade work, and will have been given an opportunity of proving them-

selves capable or incapable of doing the kind of work necessary in a conservation of vision class. With a short intensive training a teacher selected from such a group ought to make a success of special work.

SIZE OF CONSERVATION OF VISION CLASSES

The number of pupils assigned to a teacher of a conservation of vision class may vary according to the number of grades represented and to the system under which the class is established.

In classes where the regular grade work is not followed, the teacher can manage seventeen children by an arrangement covering four grades only. This system allows for a good deal of ensemble work; since the children do not go to the regular grades for oral recitations, the special teacher may vary her schedule to meet any particular need. Under other systems no teacher should be assigned more than twelve pupils, and in no case should more than five grades be represented; an attempt to cover the standard requirements of eight grades with the individual instruction and the large amount of preparatory work necessary is harmful to both teachers and pupils.

The Ohio schedule requires that where there are three grades enrolled, no teacher shall be assigned more than ten pupils, and in case of four grades no teacher shall be assigned more than eight pupils.

TIME DISTRIBUTION

The question of time distribution is a serious one in classes for conservation of vision. As has been said before, a great deal of relaxation is necessary to offset the nervous strain of close work; yet the grade work must be accomplished if educational standards are to be met and parents are to be satisfied. Part of this difficulty is overcome by the fact that far more can be accomplished in a given time by individual than by collective teaching; in some places the school day is increased a half-hour to give more time to cover the necessary requirements.

A schedule of time distribution has been carefully worked out by teachers of experience in the Ohio classes; it must be borne in

mind in considering this scheme that it is by no means arbitrary; it may vary from day to day, depending upon the nature of the lessons assigned and upon the eye condition of the pupil. Another element that enters into consideration is the child apart from his eye defect. Previous experience may have made him so shy and nervous that he can make no headway in a regular class, especially if the grade teacher is unsympathetic or unresponsive. If in the regular grade he is subjected to an undue nervous strain, this may so react on his eye condition that it may prove advisable to keep him in the special room for all his work until more social relationships can be established.

A carefully worked-out time schedule should be prepared for each child, covering his special and regular grade work, and in as far as it is practical it should be adhered to with precision, so that the entrance and exit of the special pupil to and from the regular grade may not prove a cause of annoyance to the grade teacher.

To make such scheme possible the special teacher must be furnished with the time schedule of each grade represented in her room. The older children will be able to carry out their own schedules provided there is a large clock in the room placed low enough for them to see the time readily; the special teacher must, however, take the responsibility of seeing that all children go to the regular grade on time.

General Time Distribution Schedule

No pupil should read from an ordinary print book except under conditions prescribed by the supervising eye specialist.

All written work of the sight-saving class pupil should be done in one of three ways:

(*a*) Upon the blackboard.
(*b*) Upon unglazed manila paper with a soft lead pencil or crayon; or
(*c*) Upon the typewriter.

Morning exercises should be attended in the recitation room in all grades, full time, except when these exercises are of less than ten minutes' duration. In such cases morning exercises should

be attended when the recitation immediately following is one in which the sight-saving class pupil takes part. When the morning exercises are of less than ten minutes' duration, and when the recitation immediately following is not one in which the sight-saving class pupil takes part, the special teacher should use her own judgment as to whether or not these exercises are made of sufficient value to warrant the sight-saving class pupil's attendance.

Arithmetic.—All oral arithmetic should be attended in the grade class room. Attendance in the grade class room for written arithmetic depends somewhat upon the pupil's eye condition. In cases of corneal scars, cataracts, optic atrophy, and other eye defects little affected by close work the pupil should do the written work, so far as time will permit in the grade class room, either upon unglazed paper or upon the blackboard in cases where such written work is of less than a full period's duration. This is provided that the pupil's eye defect is of such a nature as to make it possible for him to see the work on the board or provided that conditions are favorable to his obtaining copies of the work by going to the board.

In cases where the amount of close work is much restricted, as in high myopia, retinitis, choroiditis, etc., all written work should be performed in the special room. In almost all cases text-book assignments and work not easily obtainable in a form with which the pupil can work should be done in the special room.

Arrangements should be made with the grade teacher so that the pupil may not miss discussions, explanations, and other oral work relating to the written work.

In grades above the first half of the second year it is usually necessary to do a certain amount of supplementary work in the special room. Grade room demonstrations upon the board are sometimes missed by the sight-saving class pupil. These should be cleared up by the special teacher. In many cases the pupil's eye defect makes it impossible for him to do the written work as rapidly as it is done by his grade classmates. All work not completed in the grade class room should be finished in the special room.

When the entire period is given over to written work the sight-

saving class pupil should do this work in the special room, where it can be performed under conditions most favorable considering his peculiar handicap.

When the written work is done upon paper in the special room it should be turned over to the grade teacher for correction.

Geography and Nature Study.—The sight-saving class pupil should attend the grade class room full time in all grades except for map work. In grades above the first half of the third year the special teacher should supplement by reading aloud the text-book lessons, also giving the spelling of the geographic vocabulary; the special teacher should supplement the grade class work also with adapted map study lessons and nature lessons and by reading home work assignments where such material is not available in large type.

History.—The sight-saving class pupil should attend the grade class room full time in all grades. The special teacher should supplement the grade class lessons above the fifth year by reading to the pupil the text-book and other assignments.

Literature.—The sight-saving class pupil should attend the grade class room in grades above the third year to hear reading lessons when the object of the lesson is to obtain content rather than to acquire the mechanics of reading. The pupil should attend the grade room to listen to the "continued story" and the story to be dramatized. The pupil should take part in the dramatization of such stories. Instruction in the mechanics of reading should usually be given in the special room.

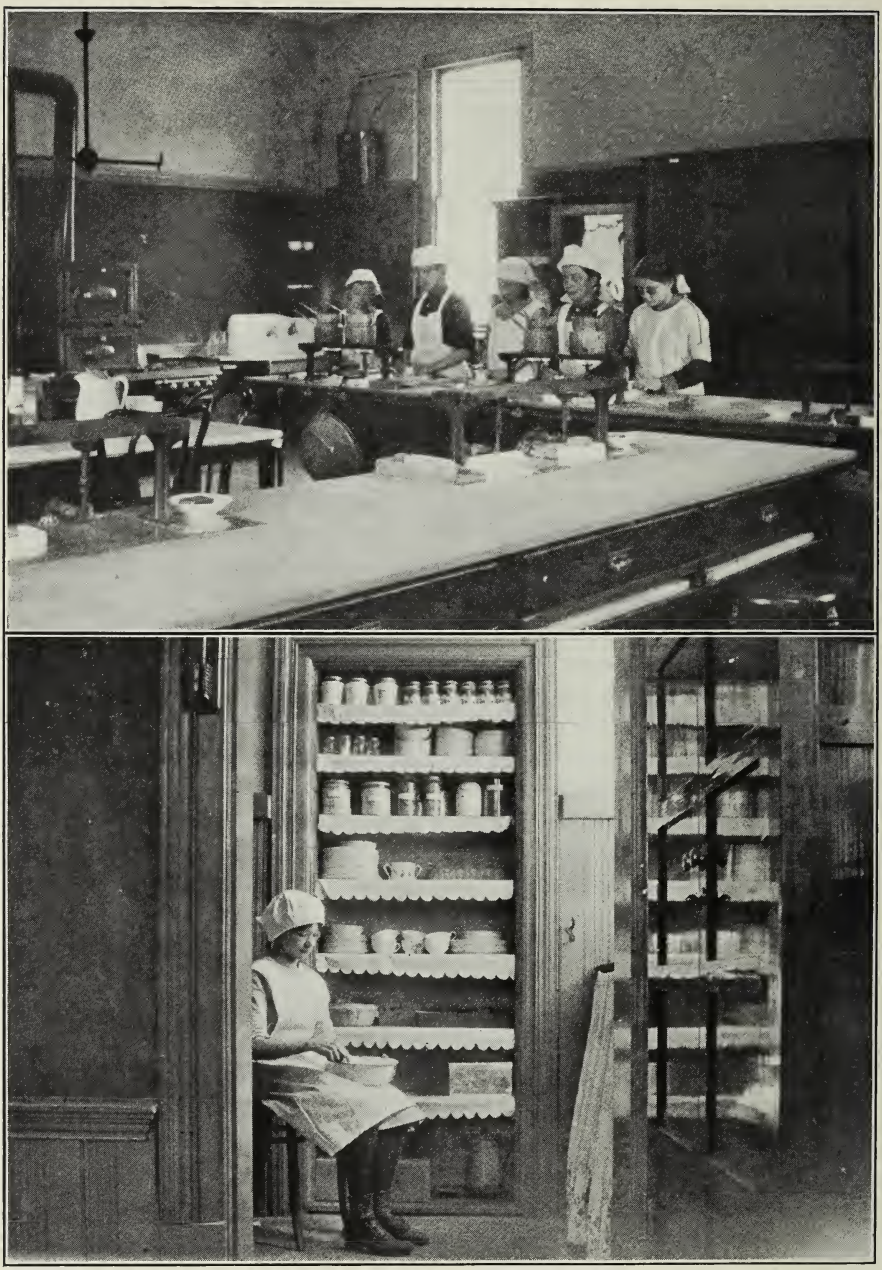
Language.—The sight-saving class pupil should attend oral language lessons in all grades.

Attendance in the grade class room for written language recitations will be decided by the same directions as those given for the arithmetic lesson.

Written Spelling.—The sight-saving class pupil should attend the grade room the full period in all grades.

Written spelling should be done with the heavy pencil upon unglazed paper or upon the blackboard.

Study spelling lessons should be attended in the recitation room whenever a satisfactory copy can be previously prepared for the pupil.



Certain phases of domestic science should form a part of every conservation of vision class program.

Special spelling lessons in the sight-saving class room should be based on the words used in other subjects.

Note.—The limited amount of reading permitted the pupil with defective vision makes him less likely than other pupils to acquire a familiarity with words appearing frequently in the text-books and on the blackboard.

Manual Training and Drawing.—The sight-saving class pupil should attend the grade class room full time in grades of the first and second year. Attendance in the grade class room above the second year is partly conditional upon the degree and the nature of the visual defect of the pupil.

When the sight-saving class pupil attends the third year class room the special teacher should follow this work closely in order to avoid work involving eye-strain.

Pupils should not attend manual training and drawing in the fourth year except in cases where a pupil shows a special aptitude for drawing. In such cases great care should be taken to avoid eye-strain.

The sight-saving class pupils should not attend manual training and drawing in the fifth and sixth years. Emphasis should be placed upon manual training in these grades in the special room.

Hygiene.—The sight-saving class pupil should attend the recitation room full time in all grades.

Music.—The sight-saving class pupil should attend the recitation room full time in grades of the first, second, and third years. The pupil should attend the grade room above the third year when ear training and rote singing are given. All general chorus singing taught for patriotic or entertainment purposes in all grades should be attended.

Physical Training.—The sight-saving class pupil should attend the grade class room full time in all grades. Grade class work should be supplemented in the special room as is required to meet the needs of the individual pupil.

Games.—The pupil should participate in all games played in the recitation room in all grades and should be urged to join in the games played outside of the class room time on the school grounds.

COÖPERATION BETWEEN THE GRADE AND THE SPECIAL TEACHER

To obtain desired results, grade and special teachers must cooperate in the interests of the child.

A strict observance of time schedules will obviate many difficulties; it is most annoying to the grade teacher to have the special student enter the class room after the lesson has been begun; it interrupts the work, distracts the attention of the other pupils, and often deprives the child of the benefit of preliminary explanations. It is equally annoying to the special class teacher to have a child return at the wrong time, because of an unannounced change in program in the regular grade, or worse still, if the change in program caused the recitation to be over before he arrived. There must, of course, be a certain amount of give and take, and a little tact will often go a long way in oiling the wheels of routine.

The good of the children, those in the regular grade and those in the special class, must constantly be borne in mind. If the assigned lessons are not properly prepared by the special student, the progress of the class is hampered and the child himself is often prevented from getting a clear conception of the work presented.

It is of utmost importance for the grade teacher to see that assignments reach the special teacher so that the latter may know exactly what is expected. If, in preparing the plan book or special lesson, the grade teacher will make a duplicate copy by using carbon paper she will greatly facilitate the work of the special teacher and will avoid the possibility of error in transmission. The special teacher cannot leave her room to obtain from each grade teacher the day's assignments; to send them by word of mouth by the student is unprofessional and unsatisfactory; there is always the possibility of misunderstanding. Note-books and pads with alternate sheets perforated can be obtained, supplied with carbon paper; the only extra work entailed upon the grade teacher is to tear out the perforated sheet and see that it reaches its destination. If the assignment is dictated to the class, the special student can write it in large

letters on his own paper; the grade teacher's O. K. should, however, be given.

Many grade teachers are apt to feel that because the special teacher has so few pupils her work is very easy and that she should, therefore, assume all the responsibility of getting assignments and planning lessons. If the grade teacher will spend one hour in a properly conducted conservation of vision class and observe the constant call upon the resources of the special teacher she will no longer consider the undertaking less arduous than her own, but will realize that ten children representing four grades, even without the necessary attention to their sight, require a far greater expenditure of nervous energy than forty children in the same grade. Moreover, since no home work can be assigned, the special teacher must take the full responsibility of preparation in the class room.

If the grade teacher will look upon the conservation of vision class as an opportunity for better work; if she will remember that it removes from her room her greatest problem, the child requiring undue attention; that it prevents her class standard from being lowered by that great discouragement, the chronic repeater; that it saves her patience and energy and gives her a clear field to make her pedagogic reputation, she will gladly coöperate in every way possible.

On the other hand, the special teacher must not fail to prove the real worth of her work. She must realize that lax discipline on her part will react through the special student on the other children; that although much moving about is necessary it can be done in an orderly manner; that assignments must be properly prepared; that if, under her guidance, a special student can go to the top of his class despite his handicap, the former indifferent attitude of his classmates will soon change to one of admiration, and the cause of the special class be largely won.

The grade teacher must be the judge of all work; if the special student is for any reason obliged to take his tests in the conservation of vision class room, the papers must be sent to the grade teacher for examination. All children will thus be given the same scale of rating; the grade teacher must decide fitness for promotion. This arrangement keeps the special student and the

special teacher up to standard grade requirements and does away with the possibility of rating according to individual rather than grade accomplishment.

COÖPERATION BETWEEN THE HOME AND THE SCHOOL

The welfare of pupils in a conservation of vision class is greatly influenced by home conditions. Many parents feel that a special class of any nature must necessarily indicate mental deficiency; hence unless an understanding is established the work of the teacher is often neutralized by the home attitude. Some parents have little sympathy with defective vision either because they do not realize its significance or because it interferes with assistance they feel they should receive from their children. Thus efforts to conserve sight at school may be frustrated by intensive eye work at home. A little Russian Jewess in a sight-saving class was found to be making no progress mentally or physically; in fact her eyes, although subjected to no strain in the class room, showed such evidence of ill usage that the teacher felt the conservation rules must be disregarded out of school. She visited the home and found that the family earned a living by doing very fine Russian embroidery, of which the child was expected to do her share. It took time and patience to convince the parents that unless this were stopped they might have a totally blind child to care for. A different division of labor was finally agreed upon by which the child did as much of the housework as she was able to accomplish without detriment to her health. As soon as the parents fully realized the seriousness they did coöperate and the child's eye condition improved rapidly.

With the small number of children in a conservation of vision class it is quite possible for the teacher, unless she is over-burdened with preparatory class work, to visit the homes of the pupils occasionally. In many cases once a term is all that is necessary; in others more calls may be needed. The establishment of friendly relationships should be the aim.

In order to gain all the coöperation possible the teacher will make every effort to see that parents understand the function of

conservation of vision classes; that there is no stigma attached to them; that they are opportunity classes in which children receive the special attention that cannot be given them in the regular grade.

When parents find that a child who has been a chronic repeater is being promoted regularly, they will realize the value of the class; but to keep them satisfied and coöperative before that stage is reached is no small matter.

The teacher may visit the home when there is a specific reason for going,—continued absences, lateness, etc.,—but the visit should in no way be connected with the idea of complaint or the purpose for making it will be frustrated. The child's welfare must be the theme.

In some cities having conservation of vision classes each teacher keeps a book in which she records her home visits; her reasons for going; the conditions found, etc. Such records often throw light on the subject, helping to give a knowledge of the present background of the child's life and of hereditary tendencies that may not have appeared in the history.

In Cleveland there is a social service visitor who manœuvers the case before it comes to the teacher and does more specialized visiting than the teacher can undertake.

She finds children who should be in a conservation of vision class, interests them and their parents in the work, and gives material assistance in adjusting differences that may arise after the child has entered the class. Her records are more technical than those of the teacher; the latter, however, form a basis for her visits; neither the teacher nor the social service visitor interferes in the least with the visits made by the nurse; their quest is of a different nature.

To illustrate: John Smith needs special treatment for the eye disease from which he is suffering. The nurse attends the clinic with him; receives instructions; visits his home; explains to the mother the necessity for the treatment; demonstrates how it is to be carried out, and returns as often as necessary to see that directions are properly followed. John arrives at school late; he says he was obliged to walk because he had no carfare; the teacher visits the home, and, in the course of conversation, finds that he

was provided with carfare; she tactfully elicits from the boy the fact that he spent the carfare to pay the dues of a boys' club to which he belongs. Her intuition tells her that something is wrong, and she calls in the assistance of the social service visitor, who makes an investigation of the club, finds that the boy has desirable interests and companions there, and visits the home to see why he used his carfare for the dues. She discovers that, although they are quite able to afford it, the parents have refused the child this legitimate pleasure; they have nothing against the club. She must then do some very tactful educating in a way that will give the parents an understanding of the necessity for recreation and at the same time show the child that it is not permissible for him to use his carfare in any other way than that for which it was intended. She may suggest that the boy perform certain household tasks for which he shall receive a weekly allowance, thus enabling him to pay his dues in the right way. She may prove to the parents that by this method they can stop in the beginning a practice in deceit, which unchecked, may grow into a hydra-headed monster. She will win the confidence of the boy so that when he is again in difficulties he may go to her for advice.

The teacher cannot take the time to accomplish all this and it certainly is not in the province of the nurse. The three work together to gain the home coöperation for the child's best interest.

In Massachusetts the special training of the Supervisor of the Children's Department of the Massachusetts Commission for the Blind enables her to undertake the type of work done by the social service visitor and the nurse in Cleveland.

PREPARATION WORK

Because of the present lack of a sufficient amount of material printed in special type for conservation of vision classes the teacher is called upon to do a large amount of preparatory work.

The New Bedford classes have met this difficulty by having the necessary printing done in the best large linotype obtainable; although this does not conform exactly to the spacing and lettering best adapted to sight saving, it is much to be preferred

to the same material prepared by hand, since this falls much further from the ideal.

Printing in small quantities is expensive, but where the board of education has a printing establishment it can be readily undertaken.

The method pursued in New Bedford is as follows: lesson material for each day is prepared long enough in advance to have the printing done. Large sheets of manila paper (12 inches by 9 inches) are used and the special lesson printed thereon. These sheets are sent to the class room unbound. Each child is provided with a piece of heavy cardboard, about an inch larger on all sides than the lesson sheet; to this the paper is clipped; thus the edges are kept clean and uncurled. The child may use this at his seat or take it to the blackboard much more readily than if he had to handle a book of the same size.

In the time allotted to busy work he prepares two cardboard covers somewhat larger than the size of paper sheets used for the daily lesson. The wall-paper companies in New Bedford have been glad to supply the classes with samples of wall-paper no longer in stock to cover these cardboards. The child is taught to put in eyelets, and, as the papers are finished with, they are inserted between the covers. This method is much less expensive than having the books bound; in cover making the sense of touch is developed; lessons are given in color, pasting, arrangement, etc. The sheets will serve other classes and covers can be replaced as they become soiled.

In other places, where this printing is not provided for, the teachers are obliged to prepare most of the work. A rubber printing outfit obtainable at educational supply companies may be used or, if written work is required, a spoon bill pen and black India ink will be found to give the best results.

Far too great an amount of preparatory work is at present required of conservation of vision teachers. They cannot devote class-room time to this, as every moment is needed for individual teaching. Every conscientious teacher of such class uses so much nervous energy during the school day that it is practically impossible for her to devote the necessary amount of time to preparation and not have the strain react upon her pupils.

As more large type material becomes available this difficulty will gradually be eliminated and the amount of preparation work will be decreased until it will equal that usually found necessary by the grade teacher.

SPECIAL CONSERVATION OF VISION CLASSES FOR TRACHOMATOUS CHILDREN

Many children are excluded from school because they are suffering from trachoma, a very serious disease of the eyes. It is often mistaken for follicular conjunctivitis; the initial symptoms are similar; but whereas the latter responds readily to treatment, trachoma is of a peculiarly obstinate nature, and often takes a very long time to cure. Hence although it is not communicable in all stages, children suffering from it may be excluded from school for some time.

To give such an opportunity for educational advantages some cities have established special conservation of vision classes for trachomatous children. The general plan outlined for conservation of vision classes applies to these, except that the segregation system must be followed. It is very essential that the regular grade work be taken up, for, provided the case is taken in time, with proper treatment practically all children suffering from trachoma can be returned to the grade.

The teacher must exercise care for her own protection. She must impress upon the children the necessity of keeping their hands from their eyes, so that articles touched by them will not become carriers of the germs. She must preach and reiterate the gospel of the individual towel, face cloth, handkerchief, soap, etc., and must make every effort to see that their families take all precautions to prevent the spread of the disease.

CONSERVATION OF VISION CLASSES IN THE HIGH SCHOOL

It is a much-discussed question whether an attempt should be made to give children suffering from defective vision higher educational advantages than those offered by the elementary school.

That there should be any question of the advisability of offering a high-school course is due to the remnant that still remains of a preconceived idea that physical handicap must denote mental handicap.

The child with defective vision is just as likely to possess a keen intellect as the child with normal vision; moreover, if his training is correct his power of concentration will be better developed, since he must learn to depend upon this rather than upon his sight for impressions; hence there is no reason why he should be deprived of a high-school education. Naturally it must be looked upon as a training rather than an end just as it is for the normally sighted child.

Special classes for conservation of vision can be arranged in the high school under exactly the same coöperative plan as that established in the elementary schools. The student will attend the regular class for all possible work and the special class for all intensive eye work. His assignments for which there are no large type books will be read to him by the special conservation of vision teacher.

Where there are but two or three pupils to be provided for in the high school, a special tutor and paid pupil readers are practical.

Where children suffering from defective vision show no great aptitude for mental work, vocational training is preferable to scholastic, just as it is with the normally sighted. Special effort should be made to offer the pupil that form of vocational training which in later life can be made use of without eye-strain.

DISPOSITION OF THE MENTALLY SUBNORMAL CHILD SUFFERING FROM DEFECTIVE VISION

The question of what to do with the mentally defective child who is suffering from eye trouble has puzzled many educators. Shall the mental defect be considered the chief handicap and the child be placed in an ungraded class, or shall the eye defect or disease be considered paramount and the advantages of a conservation of vision class be offered?

The first point to be decided is whether the child is actually

a mental defective or retarded mentally because of eye trouble, malnutrition, etc. This may seem aside from the question, but actual experience shows that a large percentage of children now doing excellent work in conservation of vision classes were considered mentally deficient in the grade.

If in the opinion of the psychiatrist or the psychologist whose function it is to make the decision the child with defective vision is pronounced a mental defective, there should be no difficulty in placing him. The line of cleavage should not, however, lie between the defective mentality and the defective vision, but, rather, between the socially incompetent and the socially competent. As a social incompetent the mental defective belongs in an ungraded class; his eye trouble must be considered an added handicap and must be given the same consideration that any other physical defect would receive; everything possible must be done to give him the benefit of special equipment in the ungraded class. Here his mental work will be of secondary consideration and care must be taken to select manual work that will reduce eye-strain to a minimum. He will naturally receive the same attention from the school ophthalmologist as that given to children in conservation of vision classes.

If there is a doubt as to his mentality, the child with defective vision should be placed in a conservation of vision class and allowed to remain there until he has demonstrated his mental ability or his subnormality. A teacher of a conservation of vision class is always willing to labor with such children as long as there is any hope of awakening a dormant intelligence; if after a fair test she finds that the intelligence is lacking rather than latent, the child must be sent to the ungraded class.

If in any locality the number of mentally defective children suffering from eye trouble is large enough to warrant it, a special conservation of vision class for mental defectives may be established; but it should be placed under the supervision of the department dealing with ungraded classes and should follow the ungraded class program.

Pupil in sight-saving class learning to use the dictaphone.

PLACEMENT OF CHILDREN WHOSE VISION IS AFFECTED BY GENERAL HEALTH CONDITIONS

Several diseases of the eye are greatly affected if not caused by general health conditions. A tuberculous child may develop a serious eye trouble that will fail to respond to treatment until the general health improves.

In such cases it is much better to place the child in an open-air camp, or an open-air class, than in a conservation of vision class. If, under correct living conditions, his health improves, his vision will often clear so that he can be returned directly to the regular grade.

VOCATIONAL GUIDANCE

There is ample opportunity in a conservation of vision class to instil into the child's mind a positive desire for some form of occupation that will require other senses than that of sight. Few children have a preconceived idea of what they wish to be or to do. There is, of course, the born mechanician, the born poet, the born actor, but for the most part children pass through various stages of desire, influenced largely by the propinquity of the moment. To attempt to combat these phases if the ambition is undesirable is but adding fuel to the flame, intensifying an impression that will doubtless wear away under a stronger influence. The program of the conservation of vision teacher should be to note carefully the possibilities of her pupils, and to lead them tactfully to an understanding of the advantages of certain types of life work. The near-sighted boy whose father is an accountant may desire to follow that line and may possess the necessary qualifications other than sight. The wise teacher will lead him to see the advantages in using those qualifications for telegraphy or wireless. The boy who desires above all things to be a great surgeon, but whose eyes will not stand the strain of study, may be interested in forestry, which will provide the outdoor life he needs; he may be led to realize that for him the healing of trees is better than the healing of men.

The girl who wishes to become a stenographer chiefly because her chum has so decided may be quietly influenced to consider

Luncheon is made a family meal in the sight-saving class. Table etiquette is judiciously taught.

the dictaphone or Ediphone, which she can readily learn to use in connection with the touch system of typewriting taught in the conservation of vision class. Horticulture may be made of interest to the child whose vision is greatly affected by the general health condition. Telephone work may be considered by the girl who must leave school early to earn a living. Salesmanship offers an excellent opportunity to both boys and girls suffering from defective vision since it requires in many lines little intensive eye work, but, rather, quick perception, personality, good judgment, etc.

Cleveland, the city that has perhaps made the greatest advance in conservation of vision work among school children, has a special vocational visitor whose function it is to search out occupations particularly adapted to those handicapped by defective vision; to interest the children in these; to assist in filling positions, and to follow up all placements.

She coöperates with the conservation of vision teacher in making a careful study of the child's possibilities and in advising for special training.

REACHING THE CONSERVATION OF VISION CLASS

Where a conservation of vision class is attended by children from a distance the question of transportation must be given consideration.

It is well to think of this when a room for a conservation of vision class is selected and to choose a centrally located building so that car lines from various directions may be used.

Parents who are able pay the necessary fare; in other cases the board of education meets the expense; this is a legitimate use to which to put school funds.

LUNCHEON

The lunch problem for children in conservation of vision classes differs considerably from that of children in the regular grades. As a rule, conservation of vision centers are widely separated; it is therefore necessary for many of the children to come from a distance; hence they cannot go home to lunch.

A place for everything.

The fact that they do come from a distance, and that they are laboring under a handicap, makes the question of proper food vital.

Where there is a lunch-room or a domestic science department in the building, the problem is simplified, although in many cases it is necessary to have a fund provided to meet the expense. Where no facilities for serving lunch exist, special plans must be made.

Many classes have a small kitchenette connected with the conservation of vision class-room; wherever possible this is in a separate room, but where space does not permit of this arrangement, it is at the back or side of the room, separated from it by a screen. The kitchenette contains a sink with hot and cold running water; a two-plate gas stove or electric hot plates on a small zinc-covered table; a limited supply of the most necessary kitchen utensils and a cabinet for dishes.

One hot dish is prepared each day by the children themselves—soup, a vegetable, chocolate, cocoa, or milk. Children who are able pay their proportionate amount of the expense, usually about three cents a day; for others a fund is allowed; the children bring from home whatever else they wish.

Each class is provided with a lunch table and chairs; the boys prepare the room, while the girls set the table and get the hot dish ready. The teacher lunches with the children, who take turns in acting as host and hostess and in serving. Table manners and as much domestic science as possible are judiciously taught. The children are encouraged to talk on subjects interesting to all.

After luncheon the girls wash the dishes and put them away, and the boys sweep up the crumbs and rearrange the room. This general idea is followed by all conservation of vision classes.

In the Worcester class each child brings something to be heated in the kitchenette. Having no luncheon table, the very resourceful teacher suggested the idea of the "family circle." The desks are cleared, and the boys move them into the form of a circle, cover them with paper napkins, and set each place; the girls heat the things brought from home and take turns in serving. The general plan is carried out of making the luncheon a family meal.

An orderly arrangement of desks in a sight-saving class having no lunch table. The little waitresses are serving hot chocolate.

The New Bedford classes have settled the question of dishes by having a large cabinet divided into generous spaces, one for each child. In these are kept the dishes the child brings from home, a square of scalloped oil-cloth, and the lunch box or basket. The desks are used, covered with the oil-cloth.

In all conservation of vision classes luncheon is preceded by a careful washing of hands and faces; each child has a box containing his own soap and is provided with a clean paper towel; after drying his hands and face he uses the towel to wipe off the soap so that it will not be put back into the box wet.

The luncheon routine takes some little time to initiate, but it soon becomes a habit, and can be carried out so expeditiously as to give the children fully half of the lunch period for outdoor play.

Just how far the influence is radiating into the home it is impossible to tell, but many indications point to a leavening of the whole. The motley array of cracked and nicked dishes at first brought by some of the New Bedford children has gradually been replaced by simple, appropriate china; the untidily packed lunch box has given way to a more appetizing arrangement; unsuitable food is gradually being replaced by more nutritious lunches; crumbs are no longer swept to the floor when the meal is over. The suggestions are given so tactfully that the children never feel humiliated. Example rather than argument is the prevailing principle, and the children hardly realize they are being led. A bit of realization of their own improvement is sometimes brought home to them by the uncouth table manners of some new pupil, whom they promptly initiate into the mysteries of the luncheon etiquette.

That there is no unwholesome restraint is evident from the enjoyment of this pleasant daily exercise.

FINANCIAL ASPECT

When public funds are used, the financial aspect of an undertaking must be given even greater consideration than when private money is expended.

Ohio was the first state to make an appropriation for the edu-

cation of children needing the advantages of a sight-saving class. In 1917 the legislature passed a bill allowing $250 a year for each child coming under its provisions.

The 1919 session of the Minnesota Legislature passed a similar bill allowing $200 a year for each sight-saving class child.

The 1919 session of the Massachusetts Legislature appropriated the sum of $10,000 annually to be used by the Massachusetts Commission for the Blind to provide adequate equipment for classes already established and to assist in the establishment of new classes for the children on the waiting list.

New York State has thus far made no appropriation for the support of this work. The Board of Education of the city of New York approves or rejects the requisitions of the supervisor of the department; other cities in the state must meet the expense as best they can.

A state appropriation is undoubtedly the best method of providing funds; if the requirements laid down in the bill are not complied with, the state may withhold the amount; this method insures proper lighting conditions and adequate equipment; in addition, small towns and cities that would be deprived of the advantages of such classes because they could not finance them benefit under a state provision.

The question is often asked whether expenditure for this work is justified. A statement of some facts should convince even the most incredulous.

A majority of children in conservation of vision classes would be excluded from all educational advantages if special classes were not provided; the state condemns illiteracy.

Of children attending conservation of vision classes, nine-tenths were habitual repeaters in the regular grades; 95 per cent of them are regularly promoted in the special class.

From 16 per cent to 33⅓ per cent of the children in sight-saving classes can be returned to the regular grade at the end of the first year.

Except in the case of progressive eye troubles, the sight of nearly all children in such classes improves; progressive troubles are often arrested.

The general health of the pupils is bettered as soon as the

eye-strain necessary to accomplish the regular grade work is relieved.

The extra money expended for the specialized education bears interest in producing independent tax-paying citizens; it would go a very little way in supporting the dependent adult who wou d probably result without the special benefit.

Salary of Conservation of Vision Class Teachers

Conservation of vision class teachers receive an annual compensation amounting to not less than $100 more than grade teachers of the same experience and training.

RESOURCES

The statement is often made that children needing glasses are without them because the parents will not or cannot buy them. In the former case a tactful, persistent nurse or teacher, if there is no school nurse, can usually make the parents see the necessity; if the lack is the result of wilful neglect, there is always a last resort to legal procedure.

There are, however, many instances in which the parents cannot buy glasses, especially if they must be paid for at the time of purchase. It is well, therefore, for teachers and nurses to have a knowledge of possible resources from which to obtain assistance.

In some places the board of education sets aside a sum for this emergency, realizing that certain children cannot obtain an education without glasses; in other places state commissions and local associations for the blind consider prevention a part of their work and are glad to aid; charity organizations can usually be relied upon to render assistance; a rotary club or a grange can often be interested, and surely there is no better work for a woman's club or a church society than to help a little child to clearer vision.

In all cases, however, the family should pay something for the glasses, even if this can be done only by installments of one or two cents a week. The whole amount need not be required, but glasses supplied gratis are considered of little value; no care is

given to them, hence there arises the necessity for frequently replacing them.

In no instance should a teacher be expected to furnish glasses; her function is to recognize the child's difficulty, to make an effort to see that he obtains relief from a legitimate source, and to help him to persevere in wearing the glasses when they are obtained. Community coöperation must accomplish the rest.

CRITICISM OF EXISTING CONDITIONS

Such splendid results are being accomplished by conservation of vision classes that it may seem ungracious to call attention to certain failings; yet adverse criticism must be made on three important points:

1. Too much written work is attempted.
2. Too small a scale is used for written work, materials and appliances.
3. Far too little attention is given to typewriting.

1. Conservation of vision class teachers do not depend sufficiently upon oral methods of instruction. Oral arithmetic, spelling, history, geography, nature study, etc., can be made just as valuable as written exercises on these subjects. There are, to be sure, certain lessons that cannot be given orally, notably reading and writing, but even in these content can be orally developed. A certain amount of written arithmetic is essential, particularly in the upper grades, but to keep a child suffering from eye trouble at written work for several periods even though these are interspersed with ten minutes of rest and recreation vitiates much of the good otherwise accomplished.

If the teacher will bear in mind that one of the chief aims in this work is to develop the child's power of concentration, she will soon find that she can obtain excellent results from the oral method of instruction. This is quite as true for the class teacher as for the special teacher, but the necessity for oral presentation is greater in a conservation of vision class than it is in a regular grade.

2. As a rule, the writing and number work of both teacher and pupil are too small. Large clear writing on the part of the

teacher will give an excellent example for the child to follow, and at the same time will be much easier for him to read than the writing so often seen, especially in blackboard work. Ample blackboard space should be provided for large writing and figures, and saving paper at the expense of the sight is a mistaken economy.

Busy work materials are often on altogether too small a scale; fine knitting and crocheting should be prohibited. Only large wooden needles and coarse material should be used, at least until the child is able to work wholly by the sense of touch. Fine weaving must be left for children with normal vision.

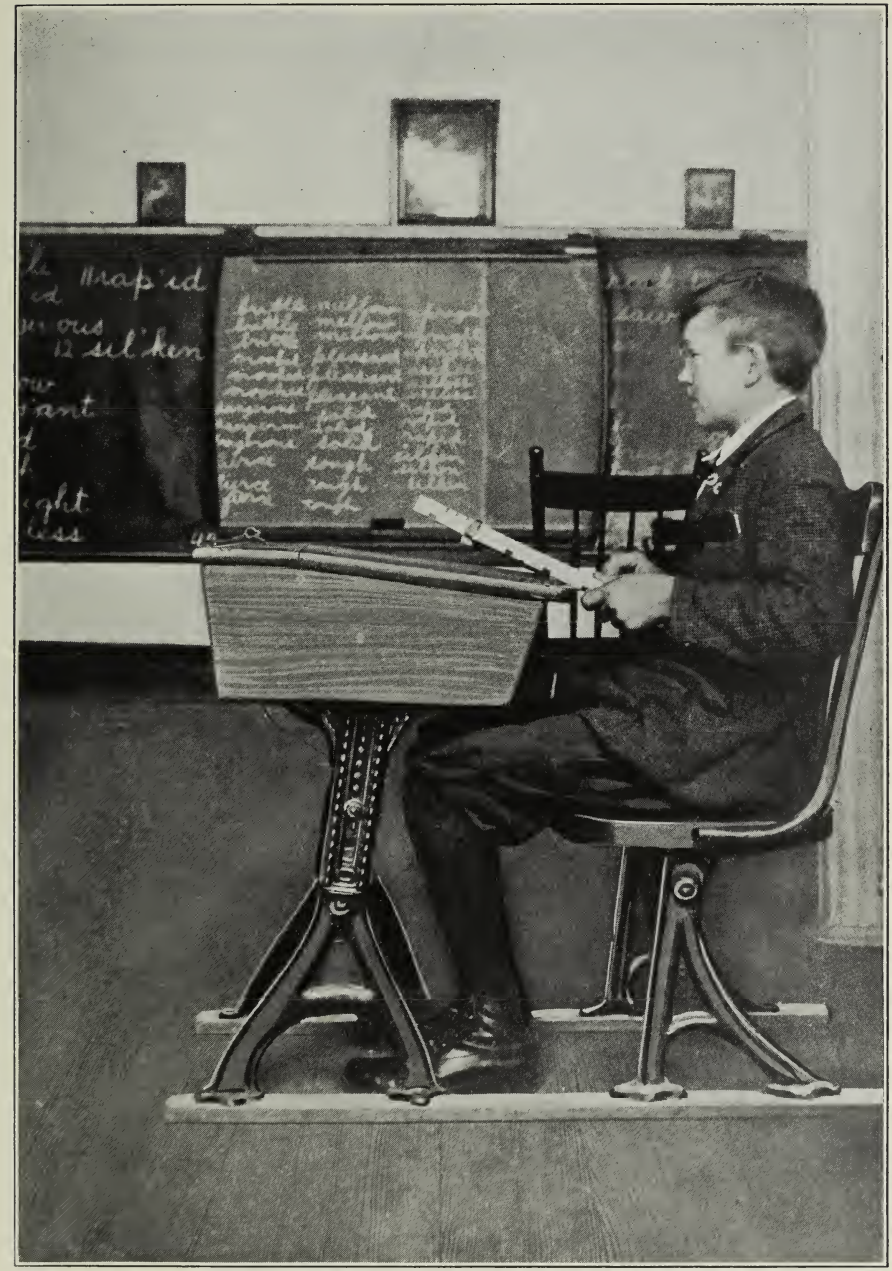
The large type book, so carefully planned in every detail, should stand as an example of conservation of vision class material, and everything should be on its generous scale.

3. Typewriting is one of the most important lines to be taken up in the conservation of vision classes. It is to serve as the chief medium of written expression for children with defective vision yet in many instances it is given less attention than any other subject. One reason seems to be that a very important pedagogic principle has been lost sight of—one cannot teach what he does not know.

There is not the slightest need for a conservation of vision teacher to be an expert typist in order to impart to her pupils a working knowledge of typewriting, but she must understand the methods of teaching the touch system; the correct fingering, the proper use of appliances, and must be able to demonstrate tolerably well. Typewriting incorrectly taught may prove a hindrance rather than a help, since it often necessitates unlearning the wrong method before a knowledge of the right method can be gained. A child who is permitted to look at the letters, to use the wrong position and fingering, to acquire a jerky writing instead of an even touch, and to gain speed at the expense of accuracy, is wasting time and energy that might be put to a good use.

GENERAL HELPS AND SUGGESTIONS

Every teacher, special or grade, develops her own methods of presentation. However, to the novice in conservation of vision



Ordinary school desk and chair fitted with runners so that they may be moved easily.

work suggestions of ideas that have been successfully carried out in other classes may prove helpful.

The material in this section has been supplied almost wholly by teachers so interested in the general good of conservation of vision classes that they have been willing to pass on suggestions that have aided them.

Everything mentioned has been seen in actual use. It is not the intention of this manual to advertise any article or to further the interests of any manufacturer. Where names are given it is merely to facilitate the work of the teacher in obtaining supplies; other material, possibly just as good, can doubtless be obtained from many sources; no effort has been made to give a complete list. Wherever anything proved useful, the name and place of supply were noted and are here included.

Equipment.—It is not always possible to obtain all the equipment desired for a conservation of vision class; where proper substitutions can be made, the lack of recommended material need not stand in the way of establishing classes.

For adequate natural and artificial lighting conditions there can be no substitute offered, but with a little ingenuity and the coöperation of the manual training department many things already at hand can be utilized.

Seating Arrangements.—If the desired chairs and desks cannot be afforded, the usual school furniture may be made to serve. At very little expense the ordinary chair and desk may be placed securely on smooth, firm runners, so that they may be readily moved from place to place without undue exertion. The runners may be attached by a carpenter, or by the manual training department, the supervisor of which is usually very glad to have some practical work for the pupils to do.

The high finish may be removed by a liquid for that purpose obtainable at any paint store.

To give the necessary angle of adjustment to the desk a device in the form of a drawing board with adjustable apparatus can be fastened securely to the flat surface, to be raised or lowered as desired. A very simple device of this nature may be made in the manual training department. The important points are that it shall be in dull finish; shall be capable of being raised to a correct

angle; shall be strong enough to bear pressure without collapsing, and be furnished with a rack at the base to hold books and papers in place.

Bins and Cupboards.—If the desirable zinc-lined bins are not possible, a long deep wooden box divided into the necessary compartments may be substituted. Book and dish closets can likewise be manufactured in the manual training department at small expense. Glass doors are desirable to keep out the dust and to encourage good order and arrangement, but failing these, curtains may be used.

Pencils.—The Eagle Alpha No. 245 and the Eagle Veriblack No. 315 have been found satisfactory; they make the necessary black thick line and wear well.

SUGGESTED HELPS IN SPECIAL SUBJECTS

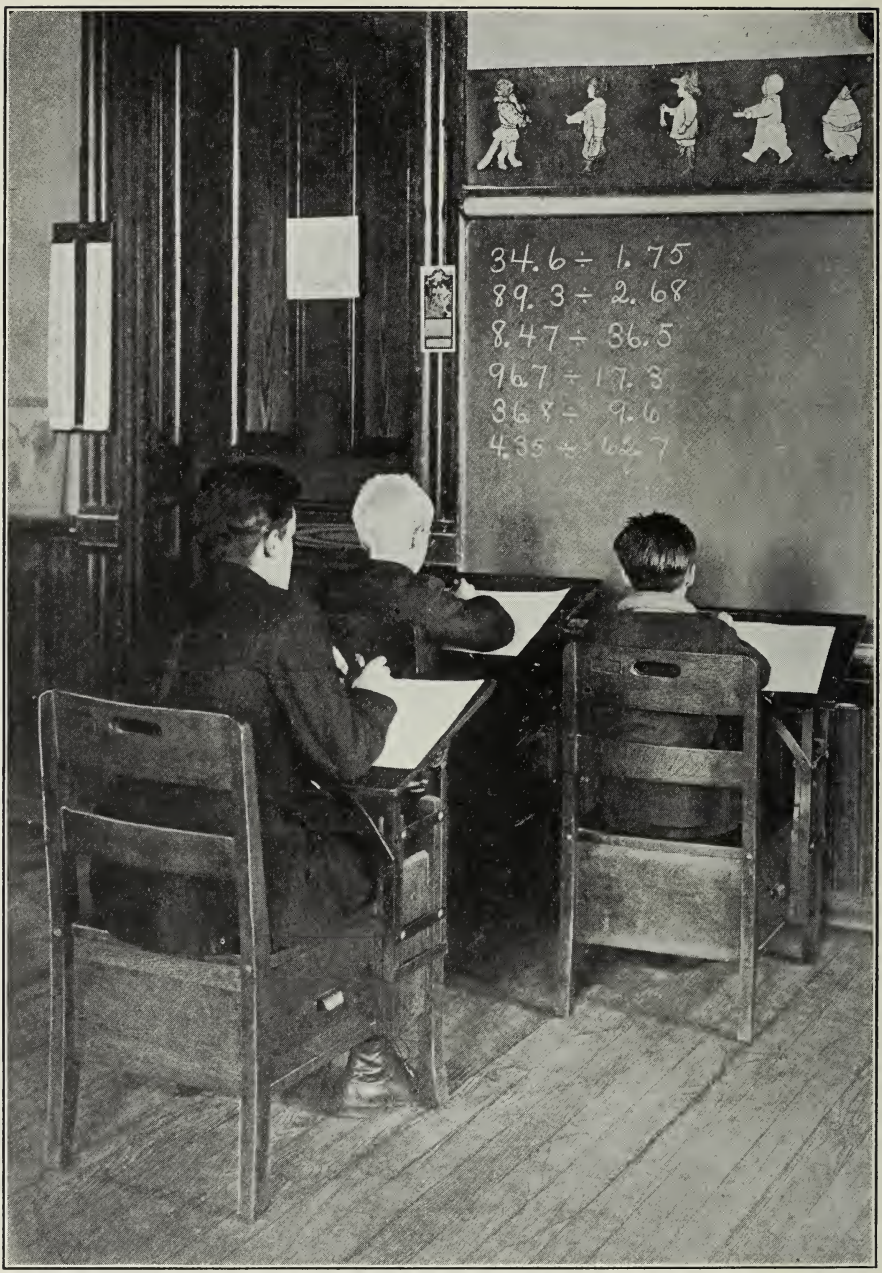
Because of the individual teaching necessary in a conservation of vision class the teacher must have on hand abundant material for pupils not taking part in the lesson. These must be of such nature that they can be used with very little explanation; the chief object is not to keep the children occupied—it is to keep them profitably employed without eye-strain.

When the principles of a lesson have been taught and the teacher has satisfied herself that the child understands the explanations and is able to apply them, she may give him work at his seat that will emphasize the points taken up.

The Arithmetic Lesson

Articles that will be found of value:

1. Tray of red and gray circles and squares; other forms may be added from time to time to lend novelty and surprise.
2. Tray of colored sticks of various lengths to be used in designing borders, patterns, etc., in constructing objects such as kites, trees, the alphabet in capital letters, the Roman numerals, the face of a clock—in fact, the many things suggested by the reading or other lesson and the story hour, that may be utilized for number work.



When clearly seen figures lose much of their terror and mystery. Note the computation sets to the left of the door for arithmetical busy work.

3. Tray of seeds—pumpkin, squash, watermelon, muskmelon, and sunflower.
4. Tray of colored half-inch kindergarten beads, cubes, spheres, cylinders, etc.
5. Sets of cards about six inches square with a number in each corner and one in the center to be used for combination number work.
6. Dominoes.
7. Toy money.

Place as much emphasis as possible on mental arithmetic. Some board work must, of course, be done, especially with pupils of the upper grades, but this should be reduced to a minimum.

For the little children the kindergarten material suggested is of great help; practically all of this can be obtained at any kindergarten supply company; most of that mentioned was obtained from the Milton Bradley Company, Springfield, Mass. The children can collect the seeds in season and the arithmetic lesson may thus be correlated with nature study.

Have the child learning numbers string the wooden beads by ones, by twos, by threes, etc., according to color or form.

Give him a handful of pegs suggesting that they represent soldiers; have him place the soldiers in straight lines of twos, threes, etc.

Cut large black figures from calendars, keep them in a box or envelope; let the child use them to make as many combinations as he can.

A number game is always interesting; give the pupil a number containing as many orders as he has been taught to read and write; ask him to make all the combinations possible, thus:

Given number	1265
Combinations	2651
	6521
	5612, etc.

Ask him to add the columns; to add the lines across; to add the results, etc., to subtract the smallest number from the next highest, etc.

Playing dominoes is always interesting to children; the younger children may be asked to put all threes together; all fives, etc. Learning to play the game is by no means a waste of time; it makes a good lesson in mental arithmetic and develops concentration and forethought.

Introduction into factoring and division: ask the child using the stick tray to lay out 36 sticks; divide into two equal parts; into three equal parts, etc.

Divide the soldier sticks so that one half will be on each side of the river.

Plant each third of a certain number of seeds in the gardens of three boys.

Give the pupils brown paper circles to represent pies; ask them to cut these into halves, quarters, eighths, etc.

A real pie, or an occasional birthday cake at the luncheon, makes a very pleasant and lasting impression of fractions.

The store is a never-ending source of suggestions. Empty containers may be obtained from almost any factory; a few shelves can readily be put up in a part of the room where they will not be in the way; a board placed across two boxes makes an excellent counter. Arithmetical computations, so irksome to children when presented in the abstract, acquire meaning and interest when learned from actual buying and selling. If it seems inadvisable to use real money, toy money may be obtained from the Milton Bradley Company. Market values may be studied; methods of manufacturing considered, followed perhaps by a visit to the factory. A basis may be laid for good salesmanship.

For teaching weights and measures a cabinet containing a very full supply may be obtained from the Milton Bradley Company; this soon pays for itself; actually to pour the contents of two pints into a quart container impresses the fact in a way that no amount of telling can hope to accomplish. It is surprising to see how rapidly some children considered dullards in the regular grade develop an arithmetical sense under individual instruction.

The following will be found helpful:

The Frank Coleman Chart for Teaching Fractions.
(Particulars from Board of Education, New York, N. Y.)

The geography lesson at his fingers' ends. The sense of touch helps to conserve the sense of sight.

Ma Grath Fraction Board.
Educational Specialties, Inc., Boston, Massachusetts.
De Croats Compact Efficiency Drill.
Iroquois Publishing Co., Syracuse, New York.
Bradley's Addition Charts.
Milton Bradley Company, Springfield, Massachusetts.
Thompson's Minimum Essentials.
Ginn and Company, Publishers, Boston, Massachusetts.
Busy Builders Book (in primer type).
Bertha B. Cobb. Published by Ginn and Co., Boston, Massachusetts.
Maxon's Self Keyed Fundamental Number Work.
William S. Maxon. Published by J. L. Hammet Co., Boston, Massachusetts.
(Order copy in type large enough for conservation of vision class pupil's own use.)

The Geography Lesson

No geography text-books in large type are yet available, hence the special teacher must be responsible for the preparation work. The teacher in the regular grade develops the content of the lesson; the special teacher reads the assignment, and takes up map work.

A large outline map may be drawn in white enamel on the roller blackboard, and details put in as desired; few of such details should be put in at a time in order that confusion may be avoided.

An outline map may be drawn on manila paper and cut out; the cut-out part may be used in connection with other cut-outs, tacked to the board to show position of continents, commerce, prevailing winds, etc. A small ship or train fastened to the top of a pointer and moved by it from place to place gives a vivid impression of routes of trade, travel, etc.

The outline left by the cut-out may be used in various ways: it may be tacked to the board, allowing the surface of the board to represent the continent; it may be placed on the sand table to act as an outline, and the sand used to reproduce the physical features; natural resources can readily be shown by this method.

For teaching the geography of the United States, Parker's

"Map of the United States cut on State Lines," obtainable at the Parker Bros., Salem, Massachusetts, will be found very helpful. Several of the cut-out maps are divided arbitrarily, hence in using them the children lose the benefit of the sense of touch in getting the size and shape of states.

Puzzle maps may be made of any country by drawing outlines, coloring the divisions, pasting the whole on thin wood, and cutting along the desired lines with a jig-saw.

One of the best methods of impressing physical features is by having the child reproduce the map in plasterine or plasticine (obtainable at school supply companies). Objects can be modeled to help in understanding the climate; the life of the people, etc., "The Caravan on the Desert," "The Home of the Eskimo," "Jungle Life in the African Forest," "An Indian Encampment."

Railroad offices supply maps that are of great help.

Geographic building blocks are good for the little folks.

An important point to be borne in mind is that many geography lessons can be taught out-of-doors. For instance, children in New York City may gain an excellent idea of the water boundaries of Manhattan Island by taking a trip on the "Sight Seeing Yacht." The teacher explains points of geographic and historic interest.

Many geographic features can be demonstrated at only a short distance from the school. This method of instruction leaves lasting impression without eye-strain. If trips cannot be arranged during school hours, an occasional afternoon or Saturday trip will well repay the trouble taken.

Books for Suggestions:

"How We Travel," in "Home and World Series," by James F. Chamberlain. Published by MacMillan Co., New York.

"Japan, a Record in Color," by Mortimer Menpes. Published by Adams and Black, 4 Soho Square, London, England.

"Around the World," Book I, by Clarence F. Carroll. Published by Silver, Burdett and Company, N. Y.

"The World's Children," by Mortimer and Dorothy Menpes. Published by Adams and Black, London, England.

A close acquaintance with the reading chart.

Device planned for the New Bedford Classes to keep letter and number cards from slipping from raised desks. Made in manual training department.

Language and Spelling Lessons

1. Embeco Phonetic Drill Cards No. 8252. Milton Bradley Company, Springfield, Mass.
2. Aldine Sight-word Cards, Newson and Co., New York City. Other word cards used in connection with the various methods of teaching reading.
3. Letter cards for sight word building.
4. Letter cards and family cards for building words in families.
5. Zinc letters, upper and lower case, called "Blind Special Letters," Cleveland Galvanizing Works, Cleveland, Ohio.
6. Wooden letter building blocks.
7. Press boards:
   Plymouth Press, Plymouth, Mass.
   Letter Boards, Multiform Sales Co., 431 N. Dearborn St., Chicago, Illinois.

Lead and wooden letters are excellent for beginners, as the sense of touch helps to conserve the sight.

An object of never-failing interest is the "Press Board," used by churches and lecture halls for presenting notices; to find the letters and assemble them to make the word and later the sentence and the story develop a keen sense of touch, accuracy, and concentration.

Letter and number cards are of so much value that the child suffering from defective vision should not be deprived of them, yet they keep constantly slipping from the raised desks.

To meet this difficulty the New Bedford classes devised an excellent plan that was successfully carried out by the manual training department. A frame is made that exactly fits over the desk, clamped to it by wooden buttons turning on screws. Slats in which very narrow grooves have been made are fastened securely across the frame, one inch apart; the child fits the number or letter cards into the groove. The device is so simple and so easily made that every conservation of vision class should be supplied, for it must be remembered that many of these children are suffering from nervous disorders and the slipping of the cards accentuates nervous strain.

Old charts may be cut up for sentence making.

Where pictures are used to develop the language lesson, care must be taken to select well-defined objects, simple in detail.

Instead of having the child write the story suggested by the picture, let him tell it.

In place of pictures, topics may be used—The Rain, The Sun, The Sky, etc.

Suggestive Books:

Language Games for all Grades, F. G. Deming.
Published by Beckley and Cardy Co., Chicago, Illinois.
Language Games, Myra King.
Published by Educational Publishing Co., New York.

Suggestive Books Containing Ideal Pictures:

"Farm Book," E. B. Smith.
Published by Houghton Mifflin Company, New York.
"Four and Twenty Toilers," F. D. Bedford.
Published by Edwin Dalton, 48 Aldergate St., London, England.
"Under the Window," Kate Greenaway.
Published by Frederick Warne and Co., 12 E. 33d St., New York.
"The Circus and All About It," Elmer B. Smith.
Published by Frederick A. Stokes Co., New York.
"The Sea Shore Book," E. B. Smith.
Published by Houghton Mifflin Company, New York.
"Dickens' Children," Jessie W. Smith.
Published by Charles Scribner's Sons, New York.
"The Seven Ages of Childhood," J. W. Smith.
Published by Moffat, Yard and Company, New York.

The History Lesson

Hart's History Aids: Ten colored maps for pupils' daily school-room use, showing growth of the United States, 1748–1913, Peckham, Little Company, New York, or School Supplies, Whitaker and Ray Company, San Francisco, California.

These maps have been found very graphic in explaining the history lesson.

City or Town History Clubs are always interesting. If such have been initiated in the regular grades, the conservation of vision class child should, of course, take advantage of them there. If not, the special teacher can find no better way of creating enthusiasm for the history lesson than by initiating the children into the local history by means of a club.

Current Topics

It is difficult to prevent the older pupils in conservation of vision classes from reading the newspapers, yet the type in which nearly all newspapers are printed is small and trying, even to normal eyes. The growing boy and girl naturally want to know what is going on in the world, and it is most desirable that this curiosity should be encouraged, but not at the expense of their sight.

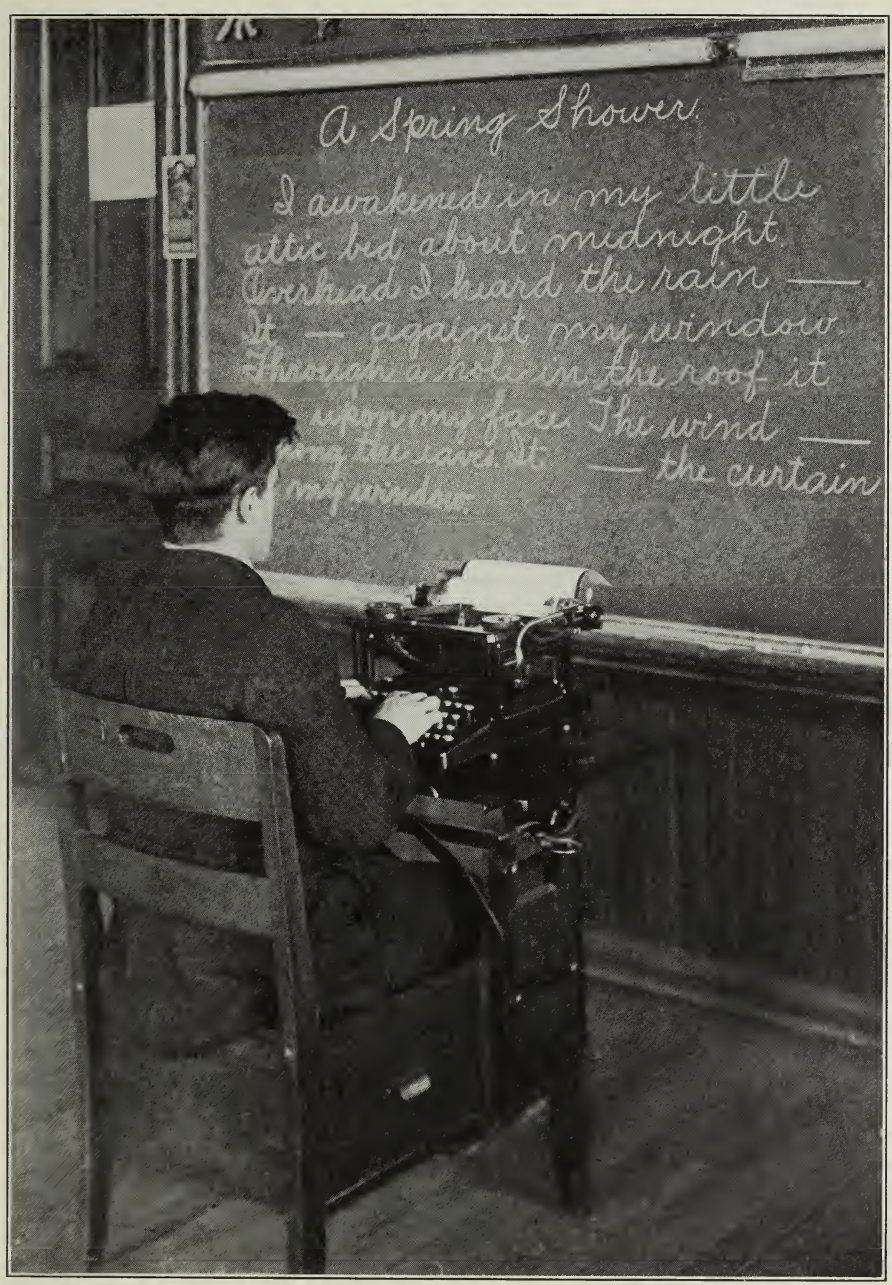
In the better class of homes this matter can be taken up with the parents and their coöperation asked in reading to the child newspaper accounts that are likely to interest him; but such co-operation is not always possible; hence the teacher must take the responsibility by making the current events lesson so interesting that the craving for "news" will be legitimately satisfied. So far as the print is concerned there is no reason why the pupils should not read newspaper headlines; a good plan is to have them cut out those that interest them; a large sheet of cardboard may be kept for the current events lesson and the headlines fastened on this for the topics of the day; this method requires a good deal of newspaper reading on the part of the teacher, but with a little discretion she can select topics that will prove of the most value and confine her attention chiefly to these. The work will, of course, be taken up in the regular grade; the responsibility of the conservation of vision class teacher is to supply the material that the child in the regular grade would be expected to get for himself.

Typewriting

Typewriting has been mentioned as one of the very important lines of work to be taken up in conservation of vision classes. Too much stress can hardly be laid upon proper instruction and training.

A study of typewriting is usually begun with fifth grade pupils; younger children, however, can often master the mechanics.

The silence pad, recommended under equipment, will eliminate some of the rather nerve-racking noise; a noiseless typewriter is satisfactory, especially where it must be used in a room where other children are at work. Children suffering from nervous


A Spring Shower.
I awakened in my little
attic bed about midnight.
Overhead I heard the rain —,
It — against my window.
Through a hole in the roof it
upon my face. The wind —
— the curtain

This near-sighted boy finds typewriting very profitable when the copy is clearly written on the blackboard and he is permitted to place his chair as close to it as is necessary.

troubles are often irritated by the clicking sound made by the manipulation of the keys.

The shield to cover the letters is essential; correct position of body and fingers must be given careful attention. First lessons may be learned from the wall chart supplied by typewriter companies; the chart should be hung so as to permit the greatest facility for seeing letters and fingering. It may have to be adjusted for each child.

As soon as the position of letters is sufficiently mastered to enable the child to pass on to words, these should be written on the blackboard; the typewriter should be placed as close to the board as is necessary in individual cases. The same plan may be followed for sentences and short exercises.

As little copy work as possible should be attempted; lessons may be given from dictation, or with older pupils the dictaphone may be employed; the resourceful teacher will read aloud the assignment in geography, history, etc., into the dictaphone at her convenience, and the pupil, by transcribing it on the typewriter, will gain two ends by one operation.

When copy work is necessary, two essentials must be borne in mind; the copy must be in large writing or printing, and it must be placed in front of the pupil. No child should ever be permitted to transcribe from copy laid flat on his desk.

There are many devices on the market for holding copy, but few are satisfactory. The holder that fastens to the typewriter vibrates with the action; this is trying to any operator, but especially so to one suffering from defective vision. The holder that must be placed at the side of the machine necessitates a constantly strained position of the head and eyes.

An excellent device seen in use is the Line-A-Time System of Transcribing, Line-A-Time Manufacturing Company, Rochester, New York. It is securely fastened by screws to the desk or table back of the typewriter, thus bringing the copy directly in front of the operator; it is adjustable, has a line marker; does not interfere or vibrate with the action, and may be readily removed when not in use.

A manual training department can often make an excellent copy holder if given the necessary suggestions.

Transposing from copy laid on the desk is a cause of eye-strain.

Line-A-Time System of Transcribing, Line-A-Time Manufacturing Co., Rochester, N. Y. This device can be securely fastened to the table or desk; it brings the copy directly in front of the operator; is adjustable; is equipped with a line marker, and does not vibrate with the action of the typewriter.

Clay Modeling

Since children with defective vision are deprived of a good part of the drawing normally sighted children profitably enjoy, special emphasis should be laid on clay modeling. The seasons offer objects that will stimulate interest—leaves, fruit, flowers, vegetables, animal and bird life.

Japanese paper toys, obtainable at almost any Japanese store, are well made and are usually correct. They are inexpensive and make excellent models for copying.

Forming vases by the Coil method makes splendid seat work and, after a few lessons, a great deal can be accomplished with very little supervision.

Manual Training

Except for measuring, there is very little intensive eye work necessary in many forms of manual training.

Were it not for the continual bending over which makes it almost prohibitive for myopic children, carpentry is an ideal occupation.

In some schools tinsmithing has been found a very advantageous form of manual work for conservation of vision class children; it gives them training in constructive work, accuracy, and concentration, and at the same time interests them because of its practical value.

The ophthalmologist in charge of the class should be consulted before special work is undertaken, and his directions followed for the kind and amount prescribed.

Physical Training

General physical training should be taken with the regular grade class. Eye difficulties, however, often lead to strained physical positions, round shoulders, poor carriage, etc. In such case the conservation of vision teacher should coöperate with the physical training teacher in carrying out corrective exercises.

After periods of eye work a few minutes of physical activity will often relieve strain; the regular drill need not necessarily be followed, a game of bean bags or of ball, a folk dance, etc., will often help the children to do better scholastic work.

Busy Work

A conservation of vision teacher has well expressed the use of "Busy Work." "In assigning any form of busy work, the teacher should remember that the child is interested in the finished product while she is interested in the child's image getting. The teacher should therefore change the form of seat work, seeking to keep the pupil actively interested and eager to be given similar work another time. Freedom of expression and definite, clear-cut imagery are the aims to be kept in view. The child's seat work is a natural outgrowth of the wholesome interests to which the daily work makes a strong appeal and thus reinforces the regular work. All seat work should serve to fix ideas, to clarify and enlarge them, and if possible to suggest new ones."

The chief aim in the getting of images is the correlation between hand and brain. As little demand as possible should be made on the eyes to assist in this correlation. Busy work that does not serve its purpose is a waste of time and encourages the child to follow idle pursuits.

All hand work should be initiated with very large utensils and material. The size may gradually be diminished as the child becomes sufficiently familiar with the plan to work chiefly by the sense of touch. No fine work should be permitted.

Weaving.—

Oil-cloth mats with slats.

Oil-cloth mats with oil-cloth strips.

Tyndall loom with slats for woof and heavy twine for warp.

Tyndall loom with raffia.

Tyndall loom with rag.

Large loom, 32 by 54 inches, similar to small loom, may be made in the manual training department; on this rug yarn will be used.

Cotton roving makes an excellent material for braided mats, afghans, etc.

The Katrinka weaving loom makes possible attractive table mats.

Basket Making.—

Baskets with wooden bases and hat straw weaving.

Baskets with wooden bases and reed weaving.

Coarse weaving makes practical busy work without eye-strain.

Busy work that involves no eye-strain is of great help in coördinating brain and hand activities.

Baskets with reed bases and reed weaving.
Baskets with raffia over reed, Lazy Squaw Stitch.
Baskets with raffia over reed, Figure-eight Stitch.
Baskets with raffia over reed, Indian Stitch.
Baskets with raffia over rope.
(Stitches are described in the Priscilla Basketry Book. See reference at end of section.)

The teacher must exercise great care in weaving and basketry that pupils suffering from progressive troubles do not strain the eyes.

Primary Work—Paper Construction.—

Baskets, cornucopias, drinking cups, furniture, etc.
Paper beads for necklaces, curtains, etc.

Take a sheet of manila paper used for writing. Divide one short end into inch spaces, placing first dot one inch from long side. Divide other short end into inch spaces, placing first dot one-half inch from long side, connect with heavy lines, cut along lines. This will provide strips one inch wide at one end, tapering to a point at the other. Beginning at the wide end paper is tightly wound on a bead roller, obtainable at a kindergarten supply store. The point is glued fast; the beads may be decorated with paint or ink. The colored supplement of newspapers makes pretty beads without other decoration.

It is unwise to allow the children to use hat-pins for rolling the beads. Eye accidents are often caused by the use of sharp-pointed apparatus.

Poster Work.—Large pictures without too much detail may be cut from advertisements and pasted on heavy paper or cardboard.

Special posters and calendars for each month hold the interest.

Sewing.—Large white buttons may be sewed in rows on cardboard with dark-colored thread.

Sewing stencils may be obtained from the Ideal Supply Company, Chicago, Illinois, and sewing cards from the J. L. Hammet Company, Boston, Mass.

Table covers—use crash, unbleached muslin, burlap, kindergarten cloth, etc. Work out design in yarns, using basting stitch. The principles of sewing and the discussion of materials may thus be taken up without eye-strain.

Construction Toys.—Supplied by nearly all school supply companies.

Mecanno Construction Toys—large and small sets.
Erector Construction Toys.
Stay Built Blocks.
Instructive Sanitary Toys (Art Toy Co., San Francisco, Cal.).

Knitting and Crocheting.—Only large needles and coarse material should be used.

Cut-outs:

Bradley's Straight Line Picture Cut-outs for Busy Work.
Milton Bradley Company, Springfield, Mass.
Cut Out Letters—directions given in Industrial Art Text Book—(See reference below).

Suggestive Books:

Priscilla Basketry Book.
Published by Priscilla Publishing Co., Boston, Mass.
"How to Make Baskets," Mary White.
Published by Doubleday, Page and Company, New York.
"More Baskets and How to Make Them," Mary White.
Published by Doubleday, Page and Company, New York.
"Industrial Art Text Books," Bonnie E. Snow and Hugo B. Froehlich.
Prang Company, Chicago, Illinois.
"School Drawing a Real Correlation," Fred H. Daniels.
Milton Bradley Company, Springfield, Mass.
"Primary Handwork," Ella V. Dobbs.
MacMillan Company, New York.
"The Place of Industries in Elementary Education," Katherine E. Dopp.
University of Chicago Press, Chicago, Illinois.
"Little Folks' Handy Book," Adelia Beard.
Charles Scribner's Sons, New York.
"When Mother Let Us Cut Out Pictures," Ida E. Boyd.
Moffat, Yard and Company, New York.
"Paper and Cardboard Construction," George E. Buxton.
Menominee Press, Menominee, Wisconsin.
"Seat Work and Industrial Occupations," Mary Louise Gilman,
MacMillan Company, New York.
"What and How," Anna Henderson.
Milton Bradley Company, Springfield, Mass.
"Educative Seat Work," Edward F. Worst.
Charles Thomas Company, Chicago, Illinois.

"Handwork for Kindergarten and Primary Schools," James L. Hoxie.
Milton Bradley Co., Springfield, Mass.
"Cardboard Construction," J. H. Tryborn.
Milton Bradley Company, Springfield, Mass.
Catalogues of school supply companies offer many suggestions for busy work.

PREVENTION

The meaning of the proverb, "An ounce of prevention is worth a pound of cure," is quickly sensed; were it as quickly put into effect there would be less need for classes for conservation of vision in the public school systems.

Educators must in time come to realize that it is indeed a poor policy to institute classes for conservation of vision with proper lighting and equipment, while the conditions in the rest of the school building are causing defective vision more rapidly than classes for its alleviation can possibly be established.

Poor lighting conditions, natural and artificial, incorrect seating, small type, highly glazed paper, polished surfaces, dark-colored walls and ceilings, etc., tend to accentuate minor eye troubles until in many cases they assume gigantic proportions. Many children who enter school with very nearly normal vision are found at the end of the fourth or fifth year to be suffering from serious eye trouble. Young children have difficulty in accommodation; in early life there is no intensive use of the eyes; on entering school the accommodation necessary for blackboard work, book print, and written exercises is very trying; if, in addition, there is insufficient light, eye-strain is almost sure to result.

Moreover, if children in conservation of vision classes go from well-lighted, properly equipped rooms to recite in rooms having no such advantages, some of the benefit received from the special arrangement must necessarily be lost.

In many cities there are school buildings so close to adjacent structures that adequate day-light is impossible; in others there is no artificial light; in still others the only artificial light is from the open, flickering gas-flame so torturing to the sight or the unshaded electric bulb with its baneful glare. In all such class rooms the teacher is expected to keep the children up to stan-

Grade class room, Delaware School, Syracuse. 24′ 0″ x 30′ 0″. Actual glass window space equals one-fifth floor area. Windows are 3′ 3″ from floor and 6″ from ceiling. Note double shades adjustable from near center.

Grade class room, Delaware School, Syracuse, artificially lighted by four ceiling lights of 200 watt capacity set in x-ray indirect fixtures with auxiliary incandescent bowl.

dard requirements; is it any wonder that she often does so at the expense of their sight?

Sometimes it is the superintendent of schools who needs educating; sometimes a special member of the board who believes that the saving of money needed for proper conditions is an economy; sometimes it may be the politicians back of the school appropriations; or the tax-payers who grudge the amount that might save endless suffering. Unfortunately, whoever is at fault, the children pay the price.

Given proper conditions, the results will be better work accomplished in a shorter time; better health; better citizens, and in time, more able tax-payers to bear their share of the burden.

Were every grade class room given the benefit of proper lighting and seating conditions, the need for conservation of vision classes would be considerably decreased.

FUTURE POSSIBILITIES

With the present ong list of children waiting to enter conservation of vision classes it will readily be seen that in the immediate future such classes can care only for those in greatest need of the advantages offered. The time will come when the function of the sight-saving class will be greatly extended. It will then be possible to consider certain aspects of sight saving that can now be given no place.

It is well known that if there is the slightest tendency to eye trouble the diseases of childhood, measles, scarlet fever, whooping cough, infantile paralysis, are likely to attack the weak spot. When children return to school after such illnesses some effort is usually made to see that they do not overtax their mental and physical strength, but it is seldom that any attention is paid to the eye condition. Many children in schools for the blind are there because no care was taken to prevent eye-strain while the eyes were still weak as a result of illness.

The conservation of vision class of the future will have room for such children; they will go to their own class for oral work, but will do all eye work under the supervision of the special teacher, who will, of course, receive her instructions from the ophthal-

mologist. The individual attention and instruction given will keep the child up to class standards and may even help to make up the time lost by the illness. It may be necessary for him to remain only a few weeks in a conservation of vision class, or it may seem wiser to keep him there for a term. When he returns permanently to the regular grade he will enter without the drawback of eye handicap.

CONCLUSION

The best recommendation for conservation of vision classes comes from the children themselves.

They never want to leave when the dismissal bell sounds.

They are not truants, although while in the regular grade truancy was perhaps their greatest fault.

They are interested, and interest is the magic word in education.

They grow independent, because they must learn to do things for themselves.

They become confident, for through confidence their trust is won.

They go forth messengers of light, because they have been saved from darkness.

APPENDICES

List of Large Type Books Available*

24 Point—Clear Type Series

The Aldine Readers		$6.20
Book One	$1.10	
Book Two	1.80	
Book Three	3.30	
Baker and Thorndike's Every Day Classics		2.85
Book Four (abridged)		
Greek Myths (Grade IV) (cloth bound)		1.40
Selected Literature for Boys and Girls		
Grade IV		2.00
Tales from Many Lands	.75	
Stories of Childhood	.65	
Cinderella and Other Stories	.60	
Grade V		4.80
Science and Nature	.65	
Romance and Adventure	.60	
Stories of Childhood	.60	
Aladdin, or The Wonderful Lamp	.60	
Robinson Crusoe	.85	
The Story of Robin Hood	.60	
Modern Heroes	.90	
Grade VI		4.45
The Discontented Pendulum and Other Stories (cloth bound)	1.25	
A Race at Sea and Other Stories (cloth bound)	1.70	
The Iliad, a Greek Hero Tale (cloth bound)	1.50	

*Large Type Books may be obtained from Mr. Robert Irwin, Department of the Blind, Board of Education, Cleveland, Ohio.

NELLIE ALLEN'S GEOGRAPHICAL AND INDUSTRIAL STUDIES

UNITED STATES		$4.90
Cotton and Sugar	.60	
Wheat and Corn	.65	
The Fruit Industry	.60	
Coal	.60	
Iron, Gold and Silver	.90	
Beef and Wool	.90	
The Lumber Industry	.65	
SOUTH AMERICA		.75
Coffee and Rubber		
EUROPE		2.80
Grapes and Olives	.75	
Flax	.60	
Norway and Other Fishing Grounds	.70	
Silks and Perfumes	.75	

GORDY'S STORIES OF EARLY AMERICAN HISTORY (selected chapters) 2.80

GORDY'S STORIES OF LATER AMERICAN HISTORY (selected chapters) 4.15

SELECTED VERSE (cloth bound)

Part 1. (for fourth and fifth grades)	2.00
Part 2. (for sixth and seventh grades)	2.00

36 Point Type

JONES' READERS

Book One	$1.10
Book Two	1.60
Book Three	2.10
Book Four	2.10

CLEAR TYPE READERS

Fairy Lore and Fable	1.35
Foolish and Wise Folk	2.65
War and Peace	2.00
Men Who Work Wonders	1.35
Winning by Work	2.65

OHIO SYSTEM FOR ARTIFICIALLY LIGHTING CONSERVATION OF VISION CLASS ROOMS

For the average size class-room (750 to 900 sq. ft. of floor area) install at least four or six outlets, preferably the latter. Provide

at least two and one-half and preferably three watts per square foot of floor area. Use indirect or semi-indirect fixtures with glassware of such a size and density that with the lamp installed therein the brightness of the glass is not greater than 400 milli-lamberts (a milli-lambert is 0.001 of the lambert, the C.G.S. unit of brightness which is the brightness of a perfectly diffusing surface radiating or reflecting one lumen per square centimeter). (A 400 watt Mazda C amp when operating at rated voltage and located in a 14-inch bowl with a depth of about nine inches will provide a brightness somewhat lower than 400 milli-lamberts.) Any size of bowl, or type of glassware, which, with the size of lamp necessary, will produce a brightness equal to or less than the above figure, will not produce a serious amount of glare. No unit of a greater brightness should be installed. With such units the ceiling should, of course, be white or very light in color.

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